The Goulstonian Lectures

ON

DEATH BY ELECTRIC CURRENTS AND BY LIGHTNING.

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

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LECTURE I.—DEATH BY ELECTRIC CURRENTS.

IN these lectures I propose to consider, first, the subject of death by electric currents, and next, death by lightning. I do this because a good deal is known for certain as to the way in which industrial and domestic electric currents bring about death in man, and much valuable experimental work has been done illustrating the effects of such currents upon the lower animals. In the case of lightning, however, although plenty of observations upon its victims have been made, the nature of lightning itself has always prevented the making of experimental observations of its effects upon living creatures. It is true that in the middle of the eighteenth century a few desultory experiments were made with the electric discharges brought down from heaven during thunderstorms by kites and lightning conductors of various kinds. But all experimentation of this kind came to an abrupt end when, in 1763, Professor Richmann of St. Petersburg was killed outright in his own laboratory by a miniature lightning stroke a foot long, while investigating the nature of the discharges collected by a lightning-rod set up on his roof above and brought down into his room (Arago).

Death by Electric Currents.

I believe that no loss of human life from industrial currents of electricity occurred before 1879, though currents strong enough to have caused death were employed in lighting the operatic stage in Paris (at the first performance of Meyerbeer's *Le Prophète*) as long ago as 1849, and in lighthouses on and off the coast of England in 1857. In 1879 a stage carpenter was killed at Lyon by the alternating current of a Siemens dynamo that was giving a voltage of about 250 volts at the time. The man became insensible at once and died in twenty minutes; artificial respiration was not applied. The first death in this country took place at a theatre in Aston, outside Birmingham, in 1880, where a bandsman short-circuited a powerful electric battery, became insensible, and died in forty minutes. Since that date the annual number of deaths from electric shock has steadily increased, particularly during this century, in which the industrial employment of electricity has extended so widely, and is now quite large. In the ten years 1901–10 the Registrar-General's returns show a total of 183 such deaths in England and Wales, the population having risen from 32½ to 36 million during that period. In the three years 1901 to 1903 there were 25 such deaths; in 1908, 25; in 1909, 29; in 1910, 26. Only 2 of these 183 victims were females, because women are so much less exposed to contact with dangerous electric currents than are men. Many deaths by electricity occur annually on the Continent, though I can only bring forward a few scattered figures to prove it. In Germany, 33 were killed in 1908, 52 in 1909, 46 in 1911. In Austria, 11 were killed by electricity in 1907, 10 in 1910, 10 in 1911. In Switzerland, 21 were killed in 1905, 19 in 1906. I think it probable that about 200 persons are killed by electricity annually over the whole of Europe. As regards the United States of America, where electricity is so very extensively employed, I have not been able to find any statistical records. As long ago as 1888 Brown estimated that during the past five years some 200 people had been killed by handling live electric wires. One must remember that in America life is held very cheap, and that safeguards and protective legislation tend to be regarded as undue restrictions upon industry and commerce. I imagine that not less than 200 persons are accidentally killed by electric currents every year in America.

As a rule, only a single person is killed by electricity in any single accident; but in an accident occurring in 1909 at Olginate, a village in Lombardy, 10 people were killed outright by a three-phase current at 3,000 volts. One was saved by artificial respiration, and about a dozen more were severely injured (Hoest).

It is necessary before going further to explain the meaning of certain technical terms that cannot be avoided when electric currents are under discussion. Any given electric current is maintained by an electromotive force or pressure that for practical purposes is measured in volts; to give a hydraulic analogy, the pressure or voltage, or, as it is still sometimes confusingly called, tension, that drives the current through an electric lamp corresponds to the head of water, or pressure measured in pounds per square inch, that causes water to run out of a turned-on tap. The rate at which a current of electricity flows, or the quantity (measured in coulombs) flowing in unit time, is measured in amperes; to give the hydraulic analogy, an electric current of so many amperes may be compared to a stream of water or so many gallons per second. The resistance met with by a current as it flows through a circuit or any part of it is measured in ohms; electric resistance is analogous to the frictional resistance met with by water flowing through pipes or in partially choked channels. An electric current that flows steadily in one direction is called "direct" or "continuous." For technical reasons it is often found more convenient to use currents that frequently and regularly reverse, flowing first in one direction round the circuit and then round in the opposite direction, say from 50 to 150 times a second; these are called "alternate" or "alternating" currents of electricity. An alternating current that reverses the direction of its flow 100 times a second is described as an alternating current of fifty periods or cycles a second, or as having a frequency or periodicity of fifty cycles; the frequency of an alternating current is of great importance in considering its dangerousness to life. Electric energy, or the power of doing work, is measured in joules; one joule represents the energy expended in one second by one ampere in one ohm.

Post-mortem Evidence as to the Cause of Death.

The interest of men of science, of physicians and pathologists, in deaths due to industrial electric currents was first shown in France. In 1882 the celebrated French medico-legal expert and pathologist, Brouardel, made a careful *post-mortem* examination of a man killed in Paris at the Tuileries by a 250-volt alternating current, and he decided that death was fulminating, due to the electric discharge, and directly caused by arrest of the heart. Bourrot at the same time examined a second and similar case *post mortem*, and came to the conclusion that death was due to violent excitation of the vagus nerve and consequent arrest of the heart, with the result that the heart could not resume its functions, and death by asphyxia followed. In 1885 a man killed instantaneously by electric shock at the Health Exhibition in London was examined forty hours after death by Sheild and Delépine. Rigor mortis was marked; extreme fluidity of the blood was observed, even the right heart being free from clots. The authors came to the conclusion that "No doubt the vital spots at the base of the brain are in such cases markedly implicated." As the result of a *post-mortem* examination made by Pla in 1891, he concluded that death by electric shock was due to an instantaneous suppression of all the organic functions. The brain and its membranes were hyperaemic in this case; the blood was fluid, but showed no microscopical change. The victim had died twenty minutes after receiving the fatal shock. In 1892 Buchanan described the case of a man who came in contact with a 2,400-volt alternating current, and fell back insensible with one cry for help. Ten minutes later he was found to be livid, with dilated pupils and blood-stained mucus coming from the nares. Artificial respiration was performed; the man inspired slightly three times and then died, becoming quite rigid in about four minutes. The *post-mortem* examination was made thirty-one hours later; rigor mortis was still marked, the blood was liquid and tarry, the brain was congested, the spinal cord was

congested but healthy. Buchanan remarked that the cause of death was evidently asphyxia. In the same year Crossland recorded the case of a youth of 17, who was killed by a current at a pressure of 115 volts. *Post mortem* the blood was found to be "fluid-inky," but no other lesion could be discovered.

It is well to say something at this point as to the infliction in America of the death penalty on criminals by means of electricity, which had been widely discussed in the lay press and the medical papers of America and this country since 1889, and was first put into practice in the State of New York in August, 1890. Various suggestions had been made as to the strength and nature of the current to be used, and the methods and sites of its application to the body of the criminal. The upshot was that alternating currents of high electromotive force—1,200 to 1,700 volts, while Carleton recommended 3,000 volts—were used, with large electrodes fixed to the head, neck, arms, legs, and elsewhere; the current was turned on several times in each case, and for periods lasting up to 70 seconds or more. Each execution, or "electrocution" as it was first called in 1892, lasted from 3½ to 8 minutes. Enormous quantities of electricity were employed in these executions. To quote one example, an alternating current of 7 amperes was maintained for 70 seconds through the body of one criminal, at a pressure of 1,500 volts; assuming that the man weighed 10 st., here was enough energy expended to raise the temperature of his whole body through more than 5° F., quite apart from any heat generated by the prolonged contraction of the electrically-stimulated muscles. Spitzka states that within twenty minutes of an electrocution the temperature of the body rises to 120° or 129.5° F. in many cases, and that coagulation of the myosin of the muscles takes place. The whole muscular system was thrown into complete tonic rigidity, we are told, when the current was turned on, and this was maintained until it was turned off. The *post-mortem* examinations of persons thus electrocuted showed, among other things, extensive capillary haemorrhages in the brain and in the floor of the fourth ventricle, and it was assumed that death was due to injury to the brain. No doubt these haemorrhages were caused by the rupture of small vessels following on the great rise in the blood pressure produced by the prolonged tonic spasm of t muscles; they are not a common feature after death by electric shock. But I think it is obvious that the *post-mortem* changes observed in such electrocutions as these are not of much use in explaining the mode of death by electric shock in industrial accidents, in which the voltage of the current is often much less, the quantity of current passing through the body of the victim is very much less (probably rarely approaching 7 amperes), and the duration of the contact is not often more than a few seconds. The conditions in which electrocutions have been performed and the electrical quantities involved in them are so very different from those ordinarily obtaining in death by accidental electric shocks, that as a matter of fact electrocutions have thrown no light at all on the mode in which deaths by misadventure with electric currents as they commonly occur are brought about. The objects of the responsible authorities were to produce instant insensibility, in the first place, and in the second place death, and both of these objects were attained by the method of electrocution adopted. It was generally supposed that death in electrocution was due to asphyxia or injury to the brain; although, and to my mind quite unjustifiably, it was also argued that it was the subsequent *post-mortem* examination, and not the electrocution, that was the real cause of death, a view that was upheld again and again from time to time in the public press of America until at any rate as late as the year 1905.

During the last twenty years a great many *post-mortem* examinations have been made in cases of sudden death by electric shock, but I do not think that any useful purpose would be served by going through them in detail, as they do not in general throw light on the exact way in which death has been brought about. Stress may, however, be laid on a few points commonly observed. In the first place, burns of greater or less superficial extent are generally seen at the points where the electric current has entered and left the body. They have been carefully studied by Sheild and Delépine, and by Mally, and are due to the relatively great resistance offered by the skin to the passage of the electric current, which is transformed into heat in proportion to the amount of resistance it meets and to the square of the current. If the current is at a low voltage and the contact is brief, the resulting burns may be so slight as easily to escape notice. But if contact with the electric conductor is prolonged, the burning may be very extensive and deep—in extreme cases it has even been found necessary to send for the fire brigade to extinguish the burning victim, who is kept alight by the transformation into heat of the electric energy being poured into him. In the second place, abnormal fluidity of the blood has often been found *post mortem*; in this, those cases of sudden death by electric shock resemble cases of sudden death by asphyxia. In the third place, no pathological changes are regularly found in the heart muscle, although there are good reasons for believing that in most instances death is directly due to paralysis of the heart. In the fourth place, the central nervous system often shows neither macroscopical nor microscopical changes of importance, except in the cases where relatively large quantities of electricity have passed through the body for long periods of time; when this happened, capillary haemorrhages have often been found in the brain and cord, with chromatolysis or destruction of the Nissl bodies in the nerve cells. In a word, the *post-mortem* evidence as to the cause of death by electric currents in industrial accidents is generally negative, but may suggest asphyxia in some cases, in others organic vascular and nervous lesions in the brain and cord.

Evidence from Anatomical and Electrical Considerations.

When one comes to look into a number of both fatal and non-fatal instances of accidental shock by industrial electric currents, it becomes apparent that the part of the body through which the current flows is extremely important in determining the result of the shock. Practically speaking, there is not the smallest danger of sudden death if the current enters one foot or leg and leaves it by the other or by the lower part of the trunk, however high the voltage and however great the current thus forced through the lower part of the body and the legs. But there is a danger, even with electric currents of as low a voltage as 65 volts, when the current travels through the thorax, and so has the chance to pass through the substance of the heart. The degree of danger here depends upon two factors—first, the resistance presented to the flow of electricity by the skin at the points at which the current enters and leaves the body, and, secondly, upon the voltage of the current. The resistance of the skin varies very widely in any given case, being high when the skin is greasy or dry, or when the area of contact with the electric conductor is small, and relatively low when the skin is wet or the area over which it comes into contact with the conductor is great. To give a single example illustrating my meaning, one may handle a bare wire carrying, say, an electric lighting current at a pressure of several hundred volts with complete impunity, so long as the hands by which the current enters or the feet or boots by which it leaves the body are dry, because in these circumstances the amount of current flowing through the body is too small to be dangerous. But if the hands and feet are damp or wet, the electrical resistance of the skin at the points of entry and exit of the current may be so much lowered that a relatively strong current will flow from the hands through the body to the feet; and if the proportion of this current that passes through the heart is strong enough to paralyse it, then sudden death will occur.

Hence the cardiac region in the thorax is the chief danger area of the body in cases of dangerous or fatal electric shock. Experimental evidence obtained from animals makes it certain that the central nervous system constitutes another area of danger; but for practical purposes the number of industrial accidents recorded in which the current entered by the head and left the body without traversing the region of the heart would seem to be small—at any rate, I have not been able to find any.

The direction in which an electric current flows through the body, whether from right to left or left to right, or whether from the head to the feet or the feet to the head, has no influence on the effects it produces. As a matter of convenience one always speaks of a current as

"entering" at the point where the body comes into contact with the uninsulated electric conductor carrying the current, and "leaving" at the place where it is in contact with some indifferent but conducting substance—with the earth in the case of a person who is standing—by means of which the current after passage through the body is conveyed back to the source whence it came. But it must be understood that these words "entering" and "leaving" are used without prejudice to the actual direction in which the current flows through the body in any given case.

Experimental Evidence.

It is upon the evidence obtained by the experimental electrocution of animals that most of our knowledge as to the modes of death by electric shock rests. No electrical apparatus capable of producing currents strong enough to kill animals was invented before about the middle of the eighteenth century. At that time electricity suddenly developed into a popular and spectacular science in France and Germany, just as in the middle of the nineteenth century table turning, spiritualism, and clairvoyance were popularly taken up all over England and America with the greatest energy. In neither case was much real scientific progress made by this arousal of popular interest; birds, beetles, and other living creatures were electrocuted by frictional electricity by Gordon (1745), Gralath (1746), Nollet (1749), and many others (Benjamin). It was noted that the birds exhibited ecchymoses where the electric sparks struck them, much like the ecchymoses seen on persons killed by lightning (Nollet). Priestley in 1767 killed kittens and dogs with the discharges of condensers, and tried without success to resuscitate a kitten by artificial respiration, distending the lungs by blowing with a quill into the trachea. Abildgaard (1775), using condensers and Leyden jars, tried without success to electrocute a 3-months-old foal; he succeeded in killing cocks and hens by electric discharges sent through the head, and made the important observation that fowls treated in this way and to all appearances dead could be brought back to life by electric shocks sent through the body from breast to back, but remained dead if not treated in this manner. Thus, a cock received the discharge of a Leyden jar through its head, and fell down apparently dead at once, blood coming from its nose and throat, no doubt in consequence of the rupture of some superficial vessels by the mechanical violence of the spark; but when a second Leyden jar was discharged into its breast the cock leaped up and flew away with alacrity, upsetting and breaking the Leyden jar. Abildgaard concluded that when death took place in the fowls it was due to syncope brought on by nervous shock.

Brodie (1828), in some experiments made to explain the mode in which death is produced by lightning, was led to suppose that electric shocks caused death by destroying the functions of the brain. He speaks of restoring to life the guinea-pigs apparently killed by electric discharges by means of perseveringly inflating their lungs by bellows. Brown-Séquard (1850) expressed the opinion that animals killed by electric discharges died by asphyxia, tetanus being set up and preventing respiration till death ensued. It must be remarked, however, that this explanation does not account for the many instances in which death occurs without the establishment of tetanus, but with simple failure of the heart or respiration.

Some important experiments on the electrocution of animals by sparks from the large induction coil belonging to the Polytechnic were made in 1869 by Richardson. They led him to believe that death could take place in two ways—either by failure of the respiration or by failure of the heart; in each case as a consequence of injury to the nervous centres. The heart was the last organ to be brought to rest. In the case of a pigeon anaesthetized with methylene bichloride and killed by a six-inch spark from the induction coil, and apparently killed outright, all four chambers of the heart went on beating for an hour and a quarter after death. Discussing the *post-mortem* observations he made, Richardson was finally led to a number of conclusions that are certainly erroneous. "Death," he said, is due "in all cases where it is instantaneous to the sudden expansion of the gaseous part or atmosphere of the blood, combined in extreme degrees of shock with a sudden conversion of animal fluid from the fluid into the gaseous condition." He had found that the vessels of the brain were distended, the arteries contracted, and that sometimes there were slight serous or haemorrhagic effusions beneath the arachnoid; "often, on lifting up the brain and medulla, there is a free escape of bubbles of gas," but he does not say whence this gas came. I cannot find that any other observer (except Corrado in a couple of instances) has observed gas in the blood vessels as the result of electrocution, either in animals or man. The large Apps induction coil Richardson used gave sparks up to 29 inches in length, and even with 29-inch sparks could produce no fatal effects unless reinforced by the use of Leyden jars; the currents he obtained would have been very small, presumably a few milliamperes at most, though the voltage would have been very great—tens or hundreds of thousands of volts; and these facts explain to some extent the inconclusive character of Richardson's results.

The fact is that electricity is a science in which beyond all others science is measurement. For all practical purposes accurate measurements of the strengths of currents, of electromotive forces and of resistances, were luxuries at the command of a few physical laboratories only until the end of the Seventies of last century. Until after the year 1880 the men of science who investigated the subject of electrocution never even thought of giving any precise figures whereby one could calculate the electrical dimensions of the currents they employed. Their statements are qualitative and not quantitative, and so are of historical rather than practical interest in any discussion about the cause of death by electricity.

One of the first experimenters to give accurate measurements of the voltages and currents he used was Grange (1884). He failed to kill guinea-pigs by continuous currents at 31 and 48 volts, and rats with currents of 62 volts; with an alternating current at 825 volts he failed to kill a dog weighing 17 lb., but some of his other attempts at electrocution were more successful. His failures were due to the want of skill with which he affixed the electrodes to the dogs, for he found the resistance of his dogs to be as much as from 50,000 to 80,000 ohms, while later experimenters have observed resistances of only a few hundred ohms when the electrodes were rationally applied to the animals. Grange found capillary haemorrhages in the central nervous systems of the animals he killed, and concluded that these haemorrhages were the cause of death. The fact that later experiments have shown that alternating currents at voltages as low as 10 or 15 volts suffice to kill dogs if electrodes are used so as to reduce the resistance of the animals to a minimum, proves what care is necessary in drawing definite deductions as to the possibilities of death by electric shocks; for here we have Grange failing to electrocute dogs with alternating currents of no less than 825 volts electromotive force.

In 1885 Mann made some interesting experiments on the effects of electricity on the action of the human heart. He applied the electrodes to the praecordia and back, and found that a slowly alternating current of from 15 to 30 milliamperes did not prejudice the heart's action. His method of experimentation was admirable, and failed to give more positive results only because the voltage he employed between the two electrodes was not large enough to drive stronger currents through the thorax, fortunately for the person on whom the experiments were made. It would be of the greatest interest to know how high a voltage can be used, and how large a fraction of an ampere can be passed with impunity through the human heart, from front to back through the thorax, with electrodes applied to the best advantage; because it is the strength of the current passing through the heart that is the main factor in determining death in the large majority of industrial accidents as they actually occur, and it is a quantity that has never yet been measured. Experiments to determine these points, however, in human beings would be far too dangerous to be justifiable—unless, indeed, some American criminal condemned to death were to offer to take on the task and were allowed to do so.

In 1885, and further in 1887, d'Arsonval made some interesting remarks on deaths caused by industrial electric currents, advancing the views as to their mode of

production that he has continued to hold faithfully ever since. These deaths, he said, were brought about in one of two ways:

(1) By direct action, the mechanical effect or disruptive action of the electric current on the tissues; or
(2) By indirect or reflex action on the nervous centres.

In the first case death is final; in the second it is often apparent only, so that the victim may recover if treated by artificial respiration immediately after receiving the shock. Most of the victims of industrial electric accidents had died of asphyxia, he believed.

In 1889 Donlin published some details of ten autopsies made on electrocuted criminals in America, and advanced the view that death was due to action of the electric current (conducted by the blood) upon the ganglia of the heart, causing a spasm of the heart muscle; in other cases it was produced by disorganization of the blood and interference with the circulation. I cannot find that these two theories ever had much vogue, or that the spasm of the heart muscle and disorganization of the blood have ever been observed experimentally, either before or after Donlin's elaboration of these views. An editorial in the *Lancet* (1890) brought forward the explanation that electrocuted persons died "by concussion of the brain and explosion within the closed cavity of the skull"; here, again, we have a theory of the cause of death that lacks any experimental evidence in its favour or even rational support. As a contrast may be quoted the excellent experiments made in 1890 by Tatum, upon dogs for the most part. He found no *post-mortem* lesions unless he used current densities many times in excess of those needed to produce death; weak currents might produce death by arresting respiration, strong currents by a permanent arrest of the heart without influencing respiration, while currents of intermediate strength might kill by arresting both the heart and the respiration simultaneously. Tatum appears to me to have been the first to give due prominence to the fact that death by electricity is generally due to paralysis of the heart, and depends on injury of the heart muscle rather than of the nerves of the heart. He also showed that section of the vagi and the use of atropine or curare gave no protection against the fatal result in these electrocutions—observations that are hard to explain on the theory that death by electric currents is due to nervous inhibition. Tatum also showed that a given current would be most fatal when the two electrodes were placed in the neighbourhood of the heart.

One may say that from the year 1890 onwards three main theories of the cause of death by electricity have held sway. The first was d'Arsonval's theory, that it was due to nervous inhibition of the heart and respiration. The second, as advanced by Tatum, attributed death to direct paralysis of the cardiac muscle by the passage of the electric current through it. The third, based mainly on the *post-mortem* examinations of electrocuted criminals in America, put death down to the gross lesions—haemorrhages—found in the brain and bulb of the victims, and produced by the vast quantities of electrical energy employed to procure an easy death.

In France the first theory was, naturally enough, generally adopted, and it was supported by many others besides the French (Biraud, Jenks, Hankel, Cunningham, Witz, Hedley, Durand, Verhoogen, Gardé, Jones, Dürck). The second theory was supported by a number of authors, some of whom held that both were true in given instances (Witz, Gardé, Hedley (1895), Dürck, Kratter, Oliver and Bolam, Cunningham, Bordier and Lecomte, Lebrun). The third met with comparatively little support outside America (MacDonald, Goelet, O'Neill, Corrado), but was reiterated with some elaboration in a modified form by Jellinek (1903). But the subject has always had great attraction for the abstract philosopher, and so it is not surprising to find that the industrious production of what may not unfairly be called "freak theories" of death by electricity has continued. Thus, Shettle (1895) attributed such deaths to the fact that the electric current deprives the arterial blood of its active magnetic properties, and prevents the corpuscles from constantly inducing magneto-electric currents in the nerves. Bennett (1897) put them down to a violent, rapid, and excessive disturbance of the normal atomic electrical equilibrium of the body, to such an extent as to cause complete and instantaneous disease and death. Coulter (1899) quotes the view that the whole volume of the blood seems to be suddenly forced to the head in the electrocution of criminals; "this alone in each and every case would explain the cause of death." I quote these views to show that the old principle of explaining *obscurum per obscurius* dies very hard.

Towards the end of the nineteenth century it became apparent that more extended experiments on animals were required to settle the mechanism of death by electric shock. In 1898 Oliver and Bolam published some investigations made upon etherized dogs and rabbits with an alternating current at 100 volts. They came to the conclusion that the deaths produced by currents of such voltages were by a primary cessation of the heart's beat as a rule, while currents at higher voltages might paralyse both heart and respiration together. Under no circumstances did these authors produce a primary failure of the respiration, and they note that it had been frequently recorded by bystanders that the persons killed by accidental shocks from industrial electric currents had breathed a few times after receiving the shock, although to all appearances dead.

Fibrillation of the Heart Muscle.

It had long been known (Ludwig and Hoffa, 1850) that one effect of electric currents on the mammalian heart might be to paralyse the ventricles by throwing them into a state of fibrillation, also known as *Herzdelirium*, fibrillary contraction or tremulation, consisting in a fine and rapid but inco-ordinate twitching of the separate muscular bundles. Kronecker and Schmey (1884) had produced fibrillation in the dog's heart by the mechanical stimulation—a pin-prick—of a certain point on the anterior aspect of the ventricle, also by ligature of the coronary arteries and by electrical stimulation. They attributed it to the destruction or paralysis of a nervous co-ordinating centre located in this particular part of the heart's muscle. McWilliam (1887) made further investigations into cardiac fibrillation, and denied that it was in any way a nervous phenomenon. He believed that it depended on physical or chemical changes in the substance of the heart muscle itself. The subject was very carefully examined again by Prevost in 1898, and it demands further consideration here because there is little doubt that cardiac fibrillation is the immediate cause of death in the majority of cases of death by electric shock in man. Prevost found, as McWilliam had found before him, that cardiac fibrillation was produced with much greater ease in certain varieties of animals and birds than in others; that in some—the dog or pigeon, for example—it was generally fatal and irremediable, while in others it tended to cease spontaneously after a longer or shorter period, the heart beginning to beat normally again; and that in the young of any given species cardiac fibrillation was more readily recovered from than in the adult. Thus, guinea-pigs weighing 1 lb. would often recover from cardiac fibrillation spontaneously; while with heavier animals weighing 2 lb. the heart would fail to begin again to beat normally, the guinea-pig dying of asphyxia with great dilatation of the heart, though long massage of the heart might enable it to recover. As to the exact mechanism whereby cardiac fibrillation was produced, Prevost expressed himself as uncertain; he did not think it due either to stimulation of an intracardiac nervous centre or to anaemia of the muscle substance, as Kronecker at one time believed. It is explained by Boruttau as due to the different excitability of the different muscular bundles composing the heart wall and the various length of their refractory periods; all the bundles are strongly stimulated by the electric current, and so contract with their maximum frequency, but as these maxima are unequal the contractions are not synchronous. Why these small and rapid local contractions are not propagated in such a way as to make the heart beat as a whole remains unknown. They may be excited by the local ionic dissociations caused by the passage of the electric current, Professor Gotch tells me, as is also the case in the analogous Porret's phenomenon observed in the frog's sartorius muscle, and may fail to be transmitted to the adjoining bundles because, although excitability remains, the power of propagating the stimulus to contract may be lowered. Fibrillation is also to be seen in

the auricles of the heart, but does not seem to be of any great importance here.

Later Experimental Evidence.

An illuminating and most extensive series of experiments on the electrocution of animals was published by Prevost and Battelli in 1899. The great merit of these authors was that they varied the electrical conditions of their experiments far more widely than any of their predecessors, and gave measurements not only of the voltages they employed but also of the amperages of the currents they passed through the various animals; they also registered the arterial blood pressure and the respiratory movements. Perusal of the published works of the vast majority of the other writers on this subject is apt to leave one with the impression that their authors were not particularly skilled physiologists or physicians in some instances, in others that they were not electrical experts or men of science. The work of Prevost and Battelli is both sound and brilliant, and shows a degree of competence in both physiological and electrical matters that inspires great confidence in their conclusions. They employed both alternating and continuous currents, and took great pains to ensure adequate electrical contacts between the terminals of their electric apparatus and the animal under experiment. In many cases one electrode was placed in the mouth, the other in the rectum; the resistance in different dogs with this arrangement varied between 250 and 400 ohms. Electrical contact was made for a few seconds or for a fraction of a second in different cases. An alternating current at five volts was painful to dogs when passed thus between mouth and rectum, but did not affect the respiration or the action of the heart. The current at a pressure of 10 volts in two seconds caused almost certain death, the ventricles of the heart being irremediably thrown into a state of fibrillation while the auricles continued to beat normally. Respiration stopped, owing to general muscular tetanus, during the passage of the current, beginning once more when it was cut off, but soon dying away again for want of irrigation of the respiratory centre in the bulb with blood, for after the current was turned on the blood pressure fell steadily away to nothing in about 15 seconds. Using metal electrodes covered with wetted cotton, suitably shaped and applied to the shaved chest-wall, they found the resistance of three dogs from one side of the chest to the other was about 300 ohms in each case, and these dogs were killed by alternating currents at 10 to 15 volts pressure. Fibrillary contractions of the heart muscle was found to be almost invariably fatal in dogs; life could be preserved for a time by massage of the heart and artificial respiration, but death ensued when these manipulations ceased, as the heart could not be induced to begin to beat spontaneously again. In the guinea-pig of medium size, however, massage of the fibrillating heart through the chest wall would sometimes restore the animal to life, the heart beginning its normal action again; the resistance of the guinea-pigs as arranged for electrocution was from 700 to 900 ohms, and pressures of from 20 to 120 volts were found to be fatal by heart failure, as a rule. It was noted that in the case of the rabbit cardiac fibrillation tended to spontaneous recovery in most cases, and in the rat always. Hence alternating currents up to a pressure of 120 volts were not often fatal to rabbits, under the conditions of experimentation employed by Prevost and Battelli, and were never fatal to rats, as the fibrillation of the heart would cease spontaneously, and the respiration would begin again soon after the current was turned off in both these animals. But death could be procured by the use of these relatively low voltages if the contact was prolonged and the current kept on until asphyxia from prolonged arrest of the respiration occurred.

Using alternate currents at higher voltages—120 to 4,800 volts—Prevost and Battelli found that the effects produced were quite different, so far as life was concerned, and that death, when it occurred, might be caused in a different way. Thus, with the dog, alternating currents sent from the head to the legs at pressures of from 240 to 600 volts caused arrest of the heart (with ventricular fibrillation) and arrest of the respiration also, the animal inevitably dying. At higher voltages, however, 1,200 to 4,800 volts, the ventricles of the heart continued to beat vigorously, though the auricles were paralysed in diastole, and respiration ceased; hence at these high voltages death was due to asphyxia from failure of the respiration, and not, as at low voltages, from heart failure, or, as at intermediate voltages, by failure of both heart and respiration together. The very important observation was made that a dog killed by the ventricular fibrillation caused by a current at 40 volts could be brought to life again if a current at a much higher pressure—4,800 volts in the present example, or 240 volts in other instances quoted later—was sent through its body so as to pass by way of the heart. Very similar results were obtained with rabbits; alternating currents at 240 volts killed by throwing the heart into a state of ventricular fibrillation, but at pressures from 600 to 4,800 volts the heart was not paralysed, but went on beating with rising arterial blood pressure, though respiration was brought to a standstill. Death in these conditions was due to asphyxia from failure of the respiration, and prolonged artificial respiration was needed to bring the rabbit back to life, and was not always successful. Analogous results were obtained in the experiments on guinea-pigs and rats. It was noted that, using these high voltages, phenomena were produced in all these animals indicating that the nervous system received injuries; general convulsions might be produced, or the respiratory movements might be upset for half an hour or more with loss of sensation and the reflexes, and the severity of the nervous symptoms was more or less in proportion to the voltage and the length of time for which the current was applied. No such phenomena depending on injury to the central nervous system were seen in the experiments at voltages up to 120 volts.

Prevost and Battelli also experimented in much the same way with the continuous electric currents of dynamos and of primary batteries. They found that continuous currents at pressures below 50 volts were not fatal to dogs even in five seconds, whereas with alternating currents pressures of 10 to 15 volts were fatal in two seconds. Between 50 and 550 volts the continuous current was uniformly fatal to dogs, causing irremediable ventricular fibrillation; artificial respiration was useless. No continuous current at voltages higher than 550 volts was available; but if it had been the authors thought that at some higher voltage it would have had the effect of stopping the cardiac fibrillation and restoring the normal action of the heart, just as was the case with the alternating current. In the case of guinea-pigs, the direct current was fatal by ventricular fibrillation at pressures of from 100 to 350 volts; but higher pressures, 400 to 550 volts, were not thus fatal, because although the heart fibrillated during the passage of the current, the extra shock of turning it off suddenly (the "extra-current at break," which d'Arsonval thought so important and fatal) restored its normal action to the heart. With rabbits, as with dogs, direct currents at pressures from 50 to 550 volts threw the heart into ventricular fibrillation, from which the rabbit might or might not recover spontaneously. With rats, the heart was thrown into ventricular fibrillation by currents at from 200 to 550 volts, but only for so long as the current was passing; when it was turned off the ventricles resumed their normal mode of beating, but the auricles were paralysed in diastole for perhaps two or three minutes before they set to work again.

It is clear, then, from these experiments that direct electric currents are much less dangerous, *caeteris paribus*, than alternating currents, for dogs, rabbits, guinea-pigs, and rats. The experiments also show clearly the importance of reducing as far as possible the resistance offered to the passage of the current through the animal, and of placing the electrodes on it in the most favourable position for producing a fatal result—in other words, of placing them so that the current passes as much as possible through the substance of the heart, when the minimum fatal voltage is to be determined.

A further series of experiments was made in 1899 by Prevost and Battelli to determine the mode of death in animals by electric shocks from induction coils and condensers. These shocks were mostly at voltages varying from 1,500 to 33,000 volts, and the electric energy available was up to 1,000 joules per shock. The duration of each shock was no doubt exceedingly brief—at a guess, perhaps a thousandth of a second. One may summarize their results by saying that the fatal effect of these

electrical discharges were in proportion neither to their voltage nor to the quantity of electricity (in microcoulombs) they contained, but to their electric energy measured in joules, taking the presence of thoracic respiration as evidence of life or death. It is worth noting that no such connexion between the amount of electric energy employed and the occurrence or not of a fatal result can be worked out in the case of animals exposed to shocks from the ordinary electric currents used industrially, or in the numerous experiments on animals already described. Young animals were generally more easily killed than old, weight for weight; the direction in which the shock passed made no difference to the result. Death was generally due to asphyxia, from central inhibition of the respiration without inhibition of the heart's action. A curious *post-mortem* lesion was sometimes found, especially in young guinea-pigs—namely, a loss of the elasticity and retractility of the lungs, which rendered recovery by the performance of artificial respiration impossible. It occasionally happened in the guinea-pig that the heart was thrown into a transient state of ventricular fibrillation; the amount of electrical energy available was not large enough to kill dogs.

In 1899 Cunningham independently made some experiments on the electrocution of etherized dogs, somewhat similar to those described a few minutes ago, and, so far as they went, with similar results. Using a continuous current at 115 volts, he found great differences in the strength of current that could be passed with impunity through different dogs; thus a large Newfoundland was killed by 300 milliamperes, while a small shaggy terrier survived 700 milliamperes, and currents smaller than 200 milliamperes were never fatal. Other experimenters have found direct currents of 200 to 300 milliamperes to be fatal to dogs; very possibly the discrepancy here may have been due to the occasional use by Cunningham of larger electrodes that did not serve to concentrate the current and make a sufficiently large proportion of it pass through the heart—a supposition confirmed by the fact that the recorded resistance (77 ohms) of one of his dogs from side to side of the chest was only a quarter of the resistance commonly found in their own experiments by Prevost and Battelli and by Weiss. Such deaths he attributed to the immediate and permanent cessation of the co-ordinated contraction of the heart caused by the electric current. He then went on to investigate the effect of electric currents applied directly to the central nervous system of the etherized dogs. He found that strong currents (1.6 amperes) through the brain caused a deep inspiration, and cessation of respiration while the current flowed; the heart kept on beating and the blood pressure rose steadily to two or three times its original value, returning again to the normal when the current was cut off and respiration began once more. But if the current was kept on for as long as four or five minutes, the heart gradually stopped. He therefore argued that death by the action of electric currents on the brain and medulla was due to asphyxia, and not to heart failure. The strength of the ordinary electric currents that may be sent through the dog's head without causing rapid death is surprising; Houston found that even 6 amperes were not necessarily fatal.

A few more recent investigations remain to be mentioned. Battelli, in 1902, electrocuted dogs, rabbits, guinea-pigs, and rats with discharges from large Ruhmkorff induction coils giving sparks up to 15 and 45 cm. in length. He was able to kill the smaller animals either by arrest of the respiration, or, using a condenser as well, by throwing the heart into fibrillary contraction. With the larger animals, however, death could only be produced by asphyxia after prolonged electrification, the available current—measured in milliamperes—being too small to cause the heart muscle to fibrillate. Battelli stated that no human being had ever yet been killed by the discharge of an induction coil, and estimated that the larger of his two coils would have required a minimum time of two minutes to kill a man, when death, had the experiment been successful, would have been by asphyxia and not by heart failure.

The fact that d'Arsonval believes death by electricity to be due to inhibition, or paralysis of the central nervous system, has been mentioned already. In 1910 he recorded a further experiment that appeared to him to prove that death by electricity, if not due to material lesions of the nervous centres and the heart, was due to Brown-Séquard's inhibition or the action of electric shock on consciousness and the psychical functions. A dog is anaesthetized with chloroform and the cerebral cortex is exposed; stimulation of the cortex with the current from a single Daniell cell (1.1 volts) is found to produce movements of the limbs. If the dog is now killed by a current at 110 volts the heart is thrown into fibrillary contractions, the respiration stops, and the cortex ceases to be excitable by the Daniell cell. At the end of a few minutes respiration begins again, and then the cortex again becomes excitable, and, lastly, in some cases the heart begins to beat spontaneously once more. This experiment d'Arsonval takes to prove that all the vital functions are affected at the same time by an electric shock, so that in his view it is superfluous to inquire whether death is due to a paralysis of the heart or not. He admits that the recovery or death of an animal from a shock that may or may not be fatal depends entirely on the question whether the cardiac fibrillation is transient or is followed by permanent loss of the ability of the heart to beat spontaneously; and as it has been found that section of the vagi has no influence on the occurrence of this cardiac fibrillation, it is, in my opinion, impossible to agree with d'Arsonval when he attributes great importance to nervous inhibition in the large majority of the fatal accidents brought about by industrial electric currents.

Note.—The references to the literature will be given at the end of the third lecture.

THE USE OF PHYSICAL CONSTANTS IN TOXICOLOGY.

By OLIVER C. M. DAVIS, D.Sc.,

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In the course of toxicological examinations it is frequently necessary to identify various organic compounds, and the increasing use of synthetic remedies renders it imperative that toxicologists should have at their disposal methods by which such drugs can be recognized with the greatest possible certainty. In cases where reasonable amounts of the substance can be obtained there is usually no great difficulty, since quantitative analyses may be made of both the original substance and its derivatives.

It sometimes happens, however, that, after a compound has been separated from some food substance or excretion, the amount available for examination is exceedingly small, and becomes still smaller after it has undergone purification. In such cases, unless some definite chemical or physiological reaction can be applied, colour tests and other purely empirical methods are adopted, and consequently, although the investigator might be satisfied with the results he had obtained, such results might not carry, and very often do not carry, such weight with others.

It is, therefore, desirable to ascertain if any physical methods are available for a more satisfactory elucidation of such problems.

One constant—the melting point—stands out pre-eminently, since it can be obtained with a very small amount of material. During recent years a modification of the usual method of identifying a substance by taking its melting point has been largely used by organic chemists.* This method may be called that of "mixed melting points."

Speaking broadly, a pure organic substance that is fusible within ordinary limits will melt sharply—that is, at one particular temperature it will be a definite solid, and when the temperature is raised gradually it will assume the liquid phase within 1° C., or possibly 2° C. Now the admixture of foreign substances with the material under examination will totally upset this state of things, and instead of fusion taking place at a definite temperature characteristic of the pure substance, it will commence at an entirely different temperature. This is

* The mixed melting point method was apparently first used by Kipping and Pope (*Trans. Chem. Soc.*, 1893, 63, 558).

due to the fact that one constituent of the mixture is acting as a solvent of the other, and solution is only gradual. A series of compounds has been investigated to illustrate this point, and in each case two substances have been chosen whose melting points are fairly close together. The usual type of apparatus was employed in which the bath was sulphuric acid.

A tube containing one pure substance was attached to the left side of the thermometer, the second pure substance to the right side, and a third tube in the middle contained an intimate mixture of equal parts by weight of each substance. The temperature was gradually raised, and the three tubes closely inspected during the process by the aid of a lens. The pure substances retained their original appearance to within about 1° C. of the final fusion point, which in each case was complete within a range of 3° C. The mixture of the two substances taken commenced to soften at a much lower temperature, and fusion extended over a considerable range in each case.

It is clear from the following table that a pair of substances may have similar melting points, but a totally different one when mixed.

Table of Melting Points of Pure and Mixed Substances.

Substance.	Melting Point.	Melting Point of Mixture.
Antipyrin	110°–113°	57°–74°
Antifebrin	110°–113°	
Anisic acid	181°–183°	145°–172°
Succinic acid	187°–188°	
Aconitine	190°–193°	160°–175°
Veronal	190°	
Thymol	50°–51°	18°–30°
p. Toluidine	45°	
Cocaine	96°–98°	63°–95°
p. Chlor-formanilide	100°–103°	
Codein	150°–152°	75°–135°
p. Acet-toluide	150°–152°	
Cinnamic acid	133°–135°	95°–115°
Phenacetin	133°–135°	
Sulphonal	126°–127°	70°–90°
β Naphthol	122°–123°	
Cocaine	96°–98°	60°–85°
Betol	95°	
Strychnine	270°	230°–240°
Cinchonidine	260°	

During the past three years I have had on two occasions to examine specimens of urine for small quantities of abnormal constituents, and in each case succeeded in extracting about 0.1 gram of a crystalline substance closely resembling veronal.*

In both instances the compound was first carefully purified, but the amount of pure material obtained was much too small to be investigated by any known method other than that described. The agreement between the melting points of veronal, the material suspected to be this compound, and a mixture of both, left no doubt as to the identity of the drug.

It is hoped that this application of a simple physical constant may prove of great value to toxicologists.

* The veronal was extracted from the urine with ether after preliminary treatment with lead acetate, etc., according to method described by Fischer and Hoppe (*Muench. med. Woch.*, No. 28, 1909).

THE recently issued report of the Sceptre Life Association, an insurance company which caters for abstainers and non-abstainers and keeps the results attained in each section separate, again shows the effect of total abstinence on the longevity of its policy holders. In 1912, of 132 deaths expected among non-abstainers 92 occurred, whilst there were only 53 out of 139 expected deaths of total abstainers. The percentage of actual to expected deaths among the non-abstaining insured (69.70) was more than double that of the abstaining policy holders, who come out with the low percentage of 38.13. For the twenty-nine years 1884 to 1912 the percentage of actual to expected deaths has been, for non-abstainers, 79.33; for abstainers, 51.68. Seeing that at the time of acceptance each class of policy holders was examined as rigidly as the others and all the lame ducks cast out, the results recorded must be regarded as evidence that the use of alcoholic liquors shortens the duration of even picked lives.

THE INTRAMURAL SPREAD OF RECTAL CARCINOMA.

[WITH SPECIAL PLATE.]

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(From the Cancer Hospital Pathological Laboratory.)

OPERATIVE measures for the eradication of cancer must be planned according to the pathological findings. That widely divergent views are held as to the particular operative treatment applicable to cancer of the rectum and pelvic colon is sufficiently evidenced by recent papers on the subject by Harrison Cripps, Paul, Miles, and Sampson Handley. It may reasonably be assumed that corresponding differences of opinion exist as to the pathological conditions which obtain; and, indeed, such assumption is amply confirmed by the perusal of these papers, as well as by the remarks made by speakers during the discussion on rectal cancer at the Royal Society of Medicine in 1910.

A convenient classification—adopted by Miles—of the pathological factors which must be considered in planning any radical operation for cancer of the rectum is as follows: (1) The spread of the disease in the bowel wall—intramural; and (2) that which occurs in surrounding or distant tissues—extramural.

This communication is concerned with the first factor, and an attempt has been made to determine its extent and significance.

Material.

This comprises 20 cases, in 18 of which the bowel investigated was removed by operation. Two *post-mortem* cases are included because they exhibit important features. The majority of these cases were operated on by surgeons at the Cancer Hospital, but for three I am indebted to Mr. Barker of University College Hospital, and for two to Mr. Gordon Taylor of the Middlesex Hospital. The operation in 13 cases was the radical abdomino-perineal, as described by Miles. In 3 cases the malignant disease was situated above the pelvic colon. The length of bowel removed in these 16 cases was from 9 in. to 23 in. In 2 cases a local resection was practised.

Technique.

The bowel was slit up immediately after operation, stretched by nailing to a piece of board, and placed in a fixative solution consisting either of formalin in normal saline or acid mercury perchloride. After fixation a strip the whole length of the bowel was taken and cut into inches. Each inch of tissue was embedded in paraffin, sectioned, and stained with muci-carmine according to the method which I have elsewhere detailed. In some cases two strips were taken.

Nature of Growth.

The growth in every case was an adeno-carcinoma. In 18 cases the appearance presented was that of a typical carcinomatous ulcer, in 1 there was a tendency to mass formation approximating to the papilliferous form, while 1 exhibited a diffuse colloid infiltration. The last specimen was obtained *post mortem* from a male patient, aged 18, who rapidly succumbed, and illustrates the extreme malignancy of this form of growth.

The ulcers presented the usual features. Their edges were irregular, rolled, and everted. The long axis of the ulcer was transverse in every case, showing a tendency to involve the bowel circularly rather than longitudinally. Another point noted with regard to these ulcers was the frequency with which a narrow tract of mucous membrane was found to be involved in cases where clinical examination suggested that the ulcer had completely encircled the bowel. This narrow tract of apparently normal mucous membrane was always situated in the mid-line posteriorly. Examination of other specimens, preserved in the museum of the Cancer Hospital, indicates that this condition is so common as to be almost characteristic. The favourite site of origin of cancer of the rectum would appear to be on the anterior or lateral wall. From this point the growth spreads round the bowel, a partial

indication of its progress being afforded by ulceration, which begins to occur at a very early stage.

Spread and Ulceration.

Microscopical examination throws some light on this process of ulceration.

It is assumed that carcinoma commences as a down-growth of glandular epithelium which pierces the muscularis mucosa and invades the submucous coat. The initial carcinomatous focus will be covered by unbroken epithelium, and surface ulceration may thereafter take place, as the growth spreads, by two possible methods.

The growth of carcinoma in the submucous and deeper layers of the bowel wall may undermine the glandular epithelium, cut off its blood supply, and so induce necrosis, thereby exposing the subjacent carcinoma as the base of the ulcer.

On the other hand, successive portions of mucous membrane may be undermined as the growth progresses, and the overlying mucous membrane may be directly involved by upgrowths of carcinoma into and replacing it. The latter process appears to be that which obtains, and the phenomenon is exhibited in Fig. 1.

It will be gathered that the carcinoma spreads more widely in the submucous coat than is indicated by the surface ulceration. The muscular coat is invaded to an equal, and frequently to a greater, extent.

The relative invasion of the various layers of the bowel wall in a typical case may be represented diagrammatically as in Fig. 2.

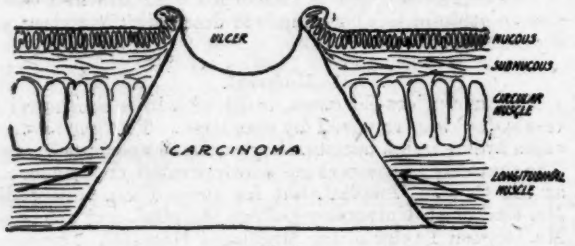

Fig. 2.

The tendency of the stroma of the growth is to progressive contraction, and the pull thereby communicated to the deeper layers of the adjacent, but uninvolved, bowel wall produces that eversion of the margins of the ulcer which is such a marked feature of these growths. Eversion of the edges of malignant ulcers in other situations may equally be a surface indication of subjacent infiltration greater in extent than the area of ulceration. Puckering of the peritoneum is another phenomenon due to the contraction of the stroma, and it is possible that the first stage of invagination may be brought about by the same means.

Invagination is frequently observed in those cases in which the greater part of the circumference of the bowel is involved and causes the growth to assume the form, when examined per rectum, of a cervix-like mass protruding downward into the lumen of the bowel. The contracting stroma of a carcinoma will exert a pull equally on the bowel above and below. The pull will, however, only be effective on the upper and more movable section, which will therefore tend to be dragged down, and this invaginating process, once commenced, will be continued and increased by peristalsis.

The tendency displayed by carcinomatous growth to encircle the bowel has been already noted. This mode of progress has been rather vaguely ascribed to the circular disposition of the vessels. The main lymphatic networks of the large bowel are: (1) The submucous; (2) the subserous; (3) an intermuscular plexus situated between the muscular layers; and two subsidiary intramuscular networks constituting (4) the plexus of the circular coat, and (5) the plexus of the longitudinal coat.

The lymph from the intramuscular networks drains for the most part into the intermuscular plexus, though communication no doubt exists between the lymph vessels of the longitudinal coat and those of the subserous plexus.

The vessels of the circular muscle coat are disposed radially, running out from the submucous coat to the intermuscular plexus like the spokes of a wheel. This arrangement is illustrated in Fig. 3, drawn from a case of lymphosarcoma. The vessels of the longitudinal coat have generally a longitudinal direction.

Examination of sections reveals the presence of an important vascular area situated between the two muscular tunics. The vessels of this intermuscular plexus have generally a circular disposition. The importance of this plexus becomes increasingly great as the bowel is traced down until, below the peritoneal reflection, it shares with the submucous plexus the task of transferring the lymph from the bowel wall to the collecting trunks.

Deposits of carcinoma in this intermuscular lymphatic plexus are depicted in Fig. 4, and it is suggested that this plexus is largely responsible for the circular distribution of carcinomatous growths.

Collecting trunks are formed on the posterior aspect of the bowel, those from the rectum draining either into the ano-rectal glands situated within the fascia propria or into the mesocolic glands lying between the layers of the mesocolon.

It is suggestive that the area of uninvolved mucous membrane, previously noted, should occur also on the posterior aspect of the gut at the site where the collecting trunks are in process of formation.

The lymphatic distribution below the peritoneal reflection is diagrammatically represented in Fig. 5.

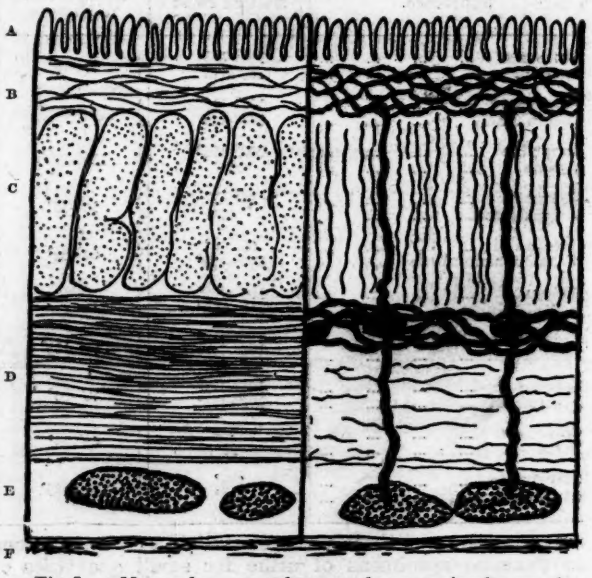

Fig. 5.—A, Mucous layer; B, submucous layer; C, circular muscle; D, longitudinal muscle; E, ano rectal gland; F, fascia propria.

One *post-mortem* specimen included in this series is preserved in the museum of the Cancer Hospital. It exhibits a small malignant ulcer the size of a sixpence situated in the mid-line on the posterior aspect of the bowel. Microscopical examination shows that the growth has spread through the whole thickness of the bowel wall, and has freely invaded the connective tissue and glands of the mesocolon. The specimen conclusively illustrates that the size of the ulcer is no measure of the intramural invasion or extramural spread.

The observations hitherto have been concerned solely with the purely local phenomena of intramural growth. In 19 cases no evidence of permeation could be detected beyond the microscopical edge of the growth.

In the remaining case—that of the patient with rapidly growing colloid carcinoma—extensive intramural spread was noted. Every part of the growth stained brilliantly with muci-carmine, so that the condition of the various layers could be easily ascertained (Fig. 6). Sections taken from the bowel wall 14 in. above the growth exhibit much the same appearance. The spread seems to have taken place primarily by means of the subserous lymphatic plexus, involving the longitudinal muscle coat, invading the intermuscular lymphatic plexus, and thence radiating towards the lumen of the bowel. The mucous membrane, though atrophied, shows no evidence of permeation or infiltration, and, although occasional deposits are present in the submucous coat, these only occur in the lower sections.

MR. PERCIVAL P. COLE: INTRAMURAL SPREAD OF RECTAL CARCINOMA.

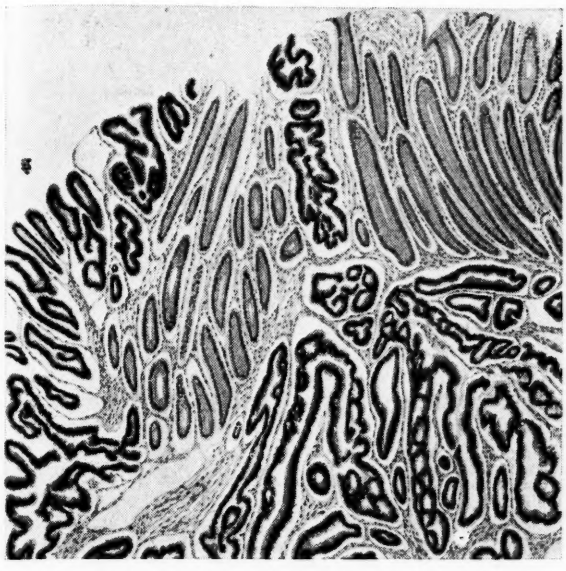

Fig. 1.—Direct invasion of mucous membrane by upgrowths from the submucous and deeper layers of the bowel wall.

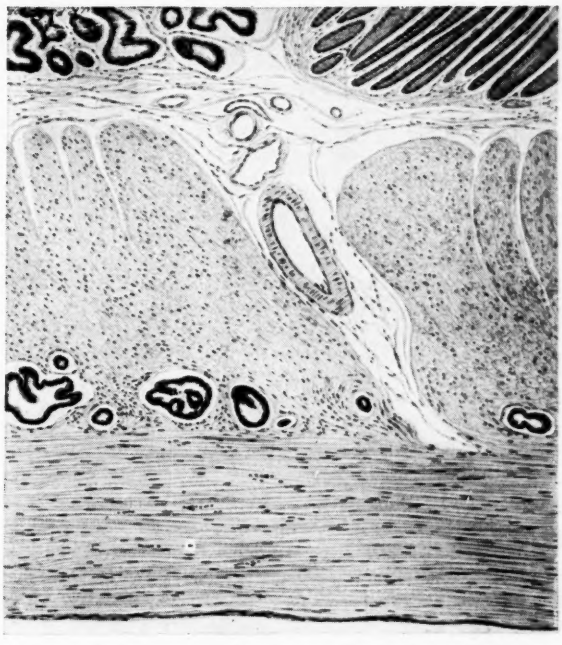

Fig. 4.—Intramural spread along the intermuscular lymphatic plexus.

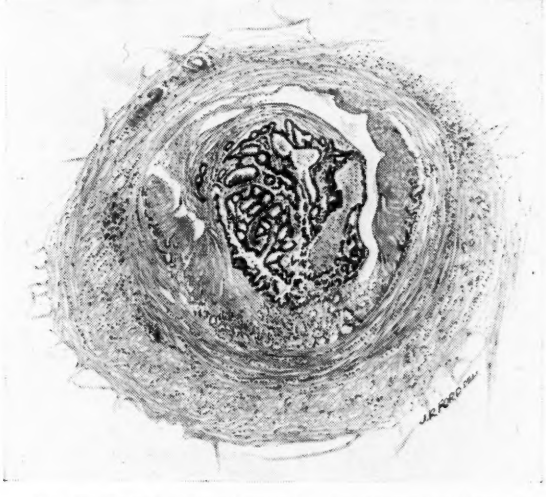

Fig. 7.—Deposit of carcinoma in the connective tissue in close proximity to the bowel wall, at a point three inches above the upper limit of the growth.

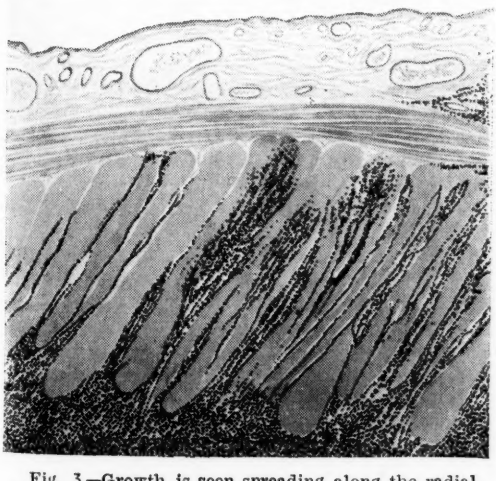

Fig. 3.—Growth is seen spreading along the radial lymphatics of the circular muscle coat.

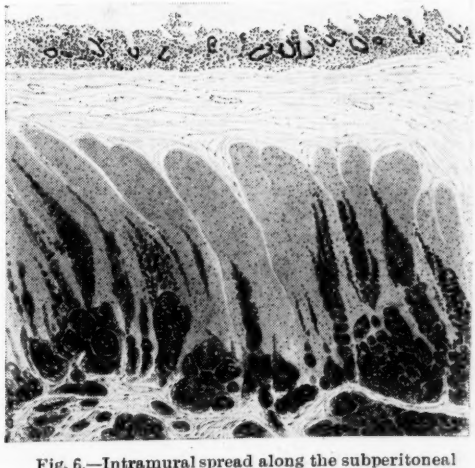

Fig. 6.—Intramural spread along the subperitoneal and intermuscular lymphatic plexuses. The growth is spreading along the radial lymphatics of the circular coat towards the submucous coat. The mucous membrane is atrophic.

MR. ARCHIBALD YOUNG: DISLOCATION OF THE METATARSUS.

Fig. 1.—Case I: Showing complete outward dislocation of metatarsus. Note prominence on inner side of foot caused by internal cuneiform.

Fig. 2.—Case II: Showing outward dislocation of metatarsus.

Fig. 3.—Case II: Showing slight dorsal displacement of proximal end of metatarsus.

Fig. 4.—Case III: Before reduction of dislocation. Note prominence on inner side of foot caused by proximal end of first metatarsal.

Fig. 5.—Case III After reduction of dislocation.

It has been suggested that local recurrence after local excision is strong evidence in favour of the presence of intramural permeation, even though such be undemonstrable.

That a typical carcinomatous ulcer may be formed as a result of invasion of the bowel wall from without is demonstrated by a case in this series.

On opening the abdomen, it was noted that the pelvic colon was densely adherent to the anterior and left lateral surface of the rectum at the bottom of Douglas's pouch. Separation from the uterus was regarded as an unsafe procedure, so this organ was also removed. On examination of the 12 in. of excised bowel the presence of two growths was revealed, though only one had been diagnosed. These were located on the bowel walls at the site of adhesion. The upper growth, in the pelvic colon, was of the whipcord type, and had completely encircled and constricted the bowel wall, giving rise to the symptoms of obstruction for which the patient was admitted to hospital. The lower growth, in the rectum, presented itself as a carcinomatous ulcer involving the anterior and left lateral walls of the bowel. It is difficult to escape the conclusion that the upper was the older growth and that the lower one had arisen as a result of contact.

In Fig. 7 is depicted a carcinomatous deposit in the pericolic connective tissue 3 in. above the upper margin of a growth. If in such a case a local excision had been practised with the removal of 1 in. of normal bowel above and below the growth, this deposit must necessarily have been left in close proximity to the intestinal junction. Local recurrence in such a case is readily explained. Clinical and *post-mortem* evidence also favours the view that recurrence is an extramural phenomenon.

Finally, it may be stated that in every case in the series the growth had spread to the tissues outside the bowel wall.

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DISLOCATION OF THE METATARSUS, WITH AN ACCOUNT OF THREE CASES.

[WITH SPECIAL PLATE.]

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FREQUENCY OF THE CONDITION.

DISLOCATION at the Lisfranc (tarsal-metatarsal) joint is an unusual form of injury, but it is probably much less rare than would be suggested by a consideration of the meagre literature on the subject. The comparative dearth of references in surgical literature may be realized when the figures given by Stimson in his treatise on fractures and dislocations are quoted:[1] "Malgaigne collected 21 cases of the various dislocations, Hitzig 29, Bayer 68, and Fischer 18 of the first metatarsal." Panse, quoted by Nasse and Borchardt, in the *Handbuch der praktischen Chirurgie* (Bergmann, Bruns, and Mikulicz),[2] "was able to collect, in the year 1897, 22 complete and 23 partial dislocations."

Considering the exposure of the foot to violence, these figures are undoubtedly small, and give almost certainly a false idea of the actual frequency of such a type of injury.

DEARTH OF RECORDS.

The relative dearth of records may in part be explained by the fact that minor degrees of displacement have been overlooked. The development of radiography in recent years ought to act now as an effective preventive of this type of error. Part explanation may also be found in the fact that the existence of these dislocations might readily be overlooked when they form mere incidents in a more severe injury to the foot and ankle, perhaps calling for immediate amputation.

Indeed, another aspect of this possibility is suggested by the fact that several writers of repute have put it on record that these dislocations, when they do occur, are usually the result of crushing force of such severity as to destroy the vitality of the soft parts to a degree which renders amputation necessary.

Thus Griffith[3] says they are usually "complicated by destruction of the soft parts, and frequently require amputation"; Wharton[4] says, "These dislocations usually result from crushing forces which destroy the vitality of the soft parts so completely that amputation is required"; and even Erichsen[5] states, "The question of amputation will always present itself in these cases, and must be determined on general principles, by the age of the patient, and by the extent of injury to the soft parts."

It is probable that such dislocations are neither so uncommon, nor, as regards the prognosis, of so grave a nature as the records and opinions referred to above would imply.

The varieties of dislocation are as follows:

1. Dislocations of single metatarsal bones.
2. Dislocations of several metatarsal bones simultaneously.
3. Dislocations of the whole metatarsus *en bloc*.

Any of these forms may be, and the second and third usually are, complicated by other injury, such as fracture, accompanying damage to the cuneiform bones or cuboid, with or without displacement, or damage to soft parts.

In Group 1 the first metatarsal seems to be by far the most commonly dislocated. In the cases reported it was almost always displaced upwards. As already quoted, Fischer[6] was able to collect records of 18 cases of this injury. The recorded cases of isolated dislocation of the other metatarsals are very few in number.

In Group 2 cases have been recorded of quite a number of different combinations. In groups of two at a time there are records of the first and second being displaced together; also the third and fourth, and the fourth and fifth. The direction of displacement varied in each—sometimes upwards and inwards, at other times upwards and backwards. In groups of three at a time, there are records of 2 cases of dislocation of the first, second, and third metatarsals, these being displaced together upon the dorsum; in 1 case the displacement was downwards into the sole. The second, third, and fourth have been, in one or two cases, displaced together upon the dorsum.

Of dislocations of four metatarsals at a time, 4 cases are mentioned by Stimson, all having been dislocations of the first four metatarsals. In two of these the affected bones were displaced bodily upwards. In 1 case (reported by Malgaigne) the first three were displaced downward, and the fourth upward. In one (reported by Ely[7]) the first metatarsal was displaced inwards, the others upwards and outwards. This case of Ely's, it will be seen later on, seems to have been very similar to one of the three cases which I have to report in this paper.

Group 3 comprises those cases in which all the metatarsal bones have been displaced bodily at the tarsal-metatarsal joint.

Four forms have been described, according as the displacement was upward, outward, downward, or inward. Only one example of each of the two last-mentioned forms has been reported, and one, the inward form, is not free from doubt as to its correct description. The case of downward displacement was reported by Smyly.[8] The injury was caused by the fall of a wagon which pressed the heel forward, while the toes were fixed.

Even the upward and outward displacements have not been met with, or recognized, with any degree of frequency. Hitzig, quoted by Stimson, gives the number of cases of upward dislocation he was able to collect as 11, the most usual cause being direct violence, but in 2 cases muscular violence was the agent, the patients sustaining the injury in making violent effort "to avoid falling, after having slipped while carrying heavy bundles."[9]

This form of dislocation may be complete or incomplete, and it may be complicated by a part or the whole of one or more of the cuneiforms being displaced along with the metatarsals. Examination has shown in those cases examined *post mortem*, or where the injury was compound, just such damage—in the way of rupture of dorsal and plantar ligaments and of muscles, in the fracture or separation of cuboid and cuneiform bones, and in the fracture of one or more of the displaced metatarsals, or

their separation from each other in a lateral direction—as one might expect such an injury would readily produce or imply. The resultant clinical picture has varied a good deal in the different cases, the normal axis of tarsus and metatarsus being in some cases preserved, in others the metatarsus being displaced laterally *en bloc*, so leading to an angular deformity, in addition to the foreshortening of the foot. The proximal ends of the metatarsals bulge on the dorsum, forming a ridge corresponding roughly to the line of the joints, or proximal to this on the dorsum of the tarsus. In some of the recorded cases reduction was successfully accomplished. Even in the cases where it failed fairly good function was obtained in time. In only one of the cases was amputation done as a primary expedient.

Of the outward dislocation, Stimson states that 10 cases have been reported, by Langier and Lacombe, Tutschek, Mignot-Danton,[10] Désprès,[11] and Bayer. It is pointed out by Stimson, as also it has been indicated by others, that in virtue of the manner in which the proximal end of the second metatarsal is locked between the first and third cuneiforms, such a lateral dislocation can hardly occur uncomplicated by fracture unless it be preceded by an upward or downward displacement. The proximal end of the second metatarsal has usually been broken, though in two cases it was the third that was fractured. In four of the ten cases quoted by Stimson reduction was effected.

Preponderance of Outward Dislocations.

The reasons for the preponderance of outward dislocation are worthy of brief reference. They are almost solely anatomical. Notice has already been taken of the fact that lateral displacement is possible only as a sequel to upward or downward displacement, or when associated with fracture. It is hardly necessary to point out further that where lateral displacement eventuates upon the vertical dislocation the latter is almost always dorsal in direction. The explanation of the preponderance of the outward displacement is not far to seek when regard is had to the anatomical relations of the cuneiform-metatarsal joint. The notch between the first and third cuneiforms into which the second metatarsal fits is not similar on its two sides. Its internal angle is about 90 degrees, while its outer is almost 120 degrees. This admits all the more readily of primary slipping of the in-fitting metatarsal towards the outer side. Further, the inner wall, formed by the first or internal cuneiform, is fully 1 cm. in height; while the outer wall, formed by the third or external cuneiform, is at most 0.5 cm. in height, so that here again is a condition which predisposes to the outward displacement.

Associated with the dislocation of the metatarsals, as has already been said, there may be fracture of the bases of the second or third metatarsals or of both. Also, there may be any degree of damage to, or comminution of, cuneiforms, and even of the cuboid. The degree of injury to, sprain, or rupture of dorsal and plantar ligaments, also of interosseous ligaments and muscles, will vary in different cases, but must always be considerable.

Causes and Method of Production of the Injury.

As regards the *actual forces causing* the metatarsal dislocation, the following facts are ascertainable from the records.

Falls of different kinds have caused the injury. For example, in several recorded cases, the first metatarsal has been dislocated by a fall from a horse, the actual displacement being determined by the pressure of the stirrup. A fall from a height—the patient alighting on the anterior part of the foot—has led to the upward displacement of the whole, or part, of the metatarsus, especially when the metatarsus has been forcibly plantar-flexed. Falls of heavy weights upon the upper part of the instep, driving the tarsus violently downwards, have led to the upward displacement of individual bones or groups of bones of the metatarsus.

Theoretically, any form of violence which is applied in the direction of abduction of the anterior part of the foot, the heel (or tarsus) being fixed, or which tends to produce forcible adduction of the heel (or tarsus) while the anterior part of the foot is fixed, may produce outward dislocation of the metatarsus. Two of the cases which I have to report are examples of the second mentioned type. Conversely, it may be surmised that, did anatomical conditions permit, or encourage, the inward dislocation, it might be produced by violence tending to produce forcible adduction of the anterior part of the foot, the heel (or tarsus) being fixed; or violent abduction of the heel (or tarsus) the front of the foot being fixed.

Forces of complex character, and applied in irregular fashion, will have to be assumed in many cases where, as for example in my third case, one metatarsal is driven in one direction and the others in the opposite direction. It is possible that the tarsus may have acted as a wedge, driving the metatarsals apart; or some direct violence of a specially localized type, applied immediately to the sole, or to the dorsal surface of the foot, may have caused the bones to be driven in opposite directions. The comparative capacities of particular ligaments for resisting special strain, and the varying force of intrinsic muscles, as applied in special circumstances, may also require to be taken into consideration.

Diagnosis.

The diagnosis of metatarsal dislocations should not be, nor is it, so far as my experience enables me to judge, difficult. More especially is this the case now that we are able to command the aid of the *x* rays to supplement what can be learnt from a careful consideration of the clinical pictures which such injuries present. Certainly, so far as the complete dislocations are concerned, there are no special difficulties.

Henry Morris[12] writing, in 1883, of the dislocations upwards and downwards, says that these "are readily diagnosed by the shortening of the foot, without a corresponding elongation of the heel, and by the projection and depression on the instep." Gould and Warren[13] corroborate thus: "When backward dislocation occurs, the foot is shortened, and a prominence, with a groove either before or behind it, is seen in the plantar and dorsal displacements. The foot is usually somewhat adducted, and the hollow of the sole is flattened." Nasse and Borchardt[14] speak of the symptoms of dorsal complete dislocation as being very characteristic (Smyly's case of plantar dislocation being the sole authentic recorded example of the other type), thus: "The whole foot seems shortened, being in the position of moderate talipes equinus, while the toes are held in the position of dorsal flexion by the tense extensor tendons. The arch of the dorsum of the foot is exaggerated; right across it there extends a tumour-like prominence, formed by the bases of the metatarsal bones."

Smith[15] called particular attention to the peculiar alteration in the form of the sole of the foot in the upward dislocation. Instead of presenting the usual concavity, this becomes convex, both in its antero-posterior and in its transverse diameters.

As regards the diagnostic features of the lateral dislocations, Morris[12] refers to the projection at the inner or the outer border of the foot; Gould and Warren[13] point out that there is not necessarily in these any shortening of the foot, but that there is "some adduction or abduction, according as the displacement is inward or outward." Nasse and Borchardt[14] are more explicit. They say: "The lateral dislocations at the Lisfranc joint are easy to recognize. In the outward dislocation the point of the foot is mostly always abducted; on the inner edge the first cuneiform, and on the outer margin the base of the fifth metatarsal project markedly. In the inward dislocation the first metatarsal forms, on the inner margin of the foot, a definite projection; correspondingly, on the outer side there is a depression, behind which the cuboid projects.

These descriptions are quite in keeping with the findings in the cases which have come under my observation. It is, in the normal foot, so easy to make out prominent bony landmarks at the tarsal-metatarsal region, that any considerable departure from the normal regularity ought to be readily appreciated, provided that a careful inspection and manual examination be made; especially if comparison be made with the other (the uninjured) foot, and provided that the examination is not delayed long enough for swelling of the soft parts to so mask contours as to preclude accurate recognition of bony outlines. Parenthetically, it may be said, that in such gross displacements as we have to deal with in cases of complete dislocation the swelling of the soft parts must be very considerable to

completely obliterate and conceal such gross changes of bony relations. Practically, indeed, this is not, in my opinion, a substantial difficulty.

X RAYS IN DIAGNOSIS AND IN TREATMENT.

Further, as has been already said, we have now the all-important *x*-ray aid to an accurate diagnosis, and this aid ought never to be neglected where there is no insuperable obstacle to its use. Even if the diagnosis seems quite clear enough without its use, it will almost certainly determine a more accurate appreciation of the exact physical condition, and not improbably lay bare some detail which would otherwise be overlooked. It is, besides, a very real, if not absolutely essential, aid to estimation of the completeness or incompleteness of reduction of the displacement once this has been undertaken, and it may be laid down quite definitely that, whatever its value, in an individual case, from the point of view of diagnosis, as a guide or check regarding the efficiency of reduction, it ought never to be neglected. Both at the time of reduction, and at some period subsequent to this (say two or three weeks), the efficiency of the treatment should be confirmed by *x*-ray plates, taken both in the vertical and in the horizontal planes.

REDUCTION OF DISPLACEMENT.

Reduction of these dislocations should not present any insuperable difficulties, though the records of some of the earlier reported cases would seem to suggest that reduction might prove a formidable, and even an impossible, undertaking. Indeed, there are on record at least two cases in which death occurred as the result, so it would appear, of the attempts at reduction.[16]

In most cases, and certainly where any difficulty is encountered, an anaesthetic should be given—ether or chloroform. Under its influence there ought not to be much difficulty in manœuvring the displaced bones into their proper position. In the case of dislocation of single bones, traction upon the displaced bone, combined with or followed by direct pressure on the projecting or displaced end, should in most instances readily effect reduction, and much the same may be said of dislocations of several bones together. If replacement prove difficult, open operation, under simple aseptic precautions, may quite readily be resorted to, and the bone or bones can be directly levered into position, or any part which cannot be fully reduced may be resected.

As for the complete dislocations, traction on the anterior end of the foot, combined with direct pressure on the dislocated bones, will generally prove effective. For the vertical dislocations this is certainly all that is ever likely to be necessary. In the case of the lateral dislocations the tarsus is first of all fixed, then traction on the anterior part of the foot is applied in such a manner as to exaggerate the pathological position. Simultaneously with this exaggeration of the malposition lateral pressure in the direction of adduction or of abduction will complete the reduction—adduction where the dislocation is outward, abduction in the case of the inward form (which, as already stated, is probably very rare).

In the three cases which I have to report reduction proved comparatively easy. In all three, chloroform anaesthesia was employed, and the actual reduction was accomplished by a combination of traction on the anterior part of the foot, adduction and abduction movements, plantar flexion followed by dorsal flexion, and direct pressure on projecting bones. In all three cases the general correctness of the replacement was at once verified by fluorescent screen and subsequently by *x*-ray plates. As stated earlier, it is probably wise to follow this course of immediate and later *x*-ray confirmation wherever possible.

TREATMENT AFTER REDUCTION.

As regards further treatment, it may be said that, once correctly reduced, these dislocations do not tend readily to redisplacement, but it is well to provide artificial fixation, by means of a plaster-of-Paris case, for several weeks. In the case of the upward displacements a period of two or three weeks ought to be ample, but where any strain is likely to be put on the foot this period may be prolonged somewhat with advantage.

In the case of lateral dislocations fixation should be maintained for a longer period, and this for two reasons: (1) on account of the greater damage to ligaments and soft tissues; (2) on account of the frequent coexistent fracture of metatarsals or cuneiforms. A period of six to eight weeks in plaster is regarded by most writers as essential, and it is generally advised that thereafter, and for some considerable time, an artificial support should be employed for the arch of the foot—such, for example, as a Whitman's brace.

In the less frequent cases, where time, care, and perhaps expense are of less importance, all forms of fixation may perhaps be dispensed with, and provided reduction has been effectively accomplished, reliance may be placed entirely on rest for a prolonged period, combined with gentle and systematic massage.

In two of the cases which follow, fixation by plaster was employed for three weeks, and no subsequent support was found necessary or advisable. In the third, the plaster case was kept on for four weeks, and was not thereafter reapplied.

It is obvious that early massage, so long as it is gently carried out, as also early active movements of the foot so as to prevent the stiffening and immobilization of the intertarsal and tarsal-metatarsal joints—so long as such movements stop short of strain on the injury-weakened ligaments—will be the most valuable and important factors in determining ultimate complete restoration of function.

In cases which have been recorded, quite tolerable functional capacity has in time been developed, even where replacement could not be at all, or at any rate completely, effected. Thus, in one case, recorded by Cock,[17] of complete upward dislocation, combined with fracture of the first cuneiform and scaphoid, reduction was not accomplished, and yet the patient was back at his work—as a railway porter—within eight months of receiving his injury.

CASE I.

R. J., aged 30, male, admitted to the Broadstone Jubilee Hospital, Port Glasgow, on November 2nd, 1909, suffering from an injury just received. A heavy bale of yarn fell upon him from some height, causing, in addition to sundry abrasions and some injury to the chest, a somewhat severe injury to his left foot. The mechanism of production of the injury to the foot seems to have been as follows: The man got just sufficient warning of the falling weight to permit him to brace himself for the shock, but insufficient to allow of his evading it. When struck by the bale he had his feet widely separated, his back and shoulders somewhat bent, and his muscles tensely strung to resist the impact. He was struck in the upper dorsal region, and it may be supposed that the impact of the force was transmitted down the trunk and both lower limbs in such a way as to exert itself in maximum intensity at the tarsal-metatarsal regions of both feet. It may also be supposed that one foot got a larger share of the violence than the other. In any case, only one foot suffered to any extent. By reason of the wide separation of the feet, and the tense state of the limb muscles, the anterior parts of the feet, and especially of the foot which suffered, may be supposed to have been fixed—jammed firmly against the ground. The downward acting force would tend, therefore, to carry the whole tarsus and heel portion of the foot inwards—as actually happened. That this had indeed happened was at once obvious on examination—even on a quite superficial examination—of the foot. The internal cuneiform could be seen and felt bulging prominently on the inner side of the foot; the fifth metatarsal could be recognized projecting abnormally on the outer side. There was considerable swelling of the soft tissues and much pain. Crepitus was felt, suggesting some comminution of bone either at proximal ends of second and third metatarsals, or of cuneiforms, or of both. Examination by fluorescent screen, and subsequently by *x*-ray plate, confirmed the diagnosis of dislocation and determined the extent of displacement as well as of the accompanying fracture.

Considering the violence necessary to produce the dislocation, the amount of actual damage to bone seems small. In the accompanying reproduction (Fig. 1) of the radiographic picture the displacement is well shown, but the exact damage to bone is not quite definite. That there is some bone fracture is obvious, but whether this has been of the proximal end of the second metatarsal or of the projecting extremity of the third cuneiform is not clear.

As the man suffered great pain the dislocation was reduced without delay under chloroform anaesthesia. The reduction was easily accomplished by traction on the anterior part of the foot, followed by plantar flexion and forcible adduction. The correctness of the reduction was at once verified by fluorescent screen and confirmed by an actual plate exposure. The corrected foot was at once fixed in a plaster-of-Paris case, with the ankle at right angles, and the foot in a position of moderate inversion.

The plaster support was retained for three weeks. The patient had no pain to speak of, once the reduction had been

accomplished, and swelling quickly subsided; so much so that the plaster case was probably not of very great value after the first few days. At the end of three weeks it was removed and massage was instituted. After a week of this the patient was allowed to get about, but was advised not to put his full weight on the foot for a week or two more. The arch of the foot was well restored, and there was not then—nor did there appear later—any tendency to recurrence of displacement. Completely satisfactory function was restored in about ten weeks. No artificial support was employed subsequent to the removal of the plaster.

CASE II.

W. P., aged 46. Admitted to the Broadstone Hospital, Port Glasgow, on February 28th, 1911. The patient, a man, was injured in a shipyard by a falling plate, which slid down the front of the right leg, and pinned the anterior part of the booted foot, so that it had to be extricated subsequently by the man's comrades. Immediately the foot was thus caught by the fallen plate as in a vice the man fell over to the right, so that the heel portion of the foot was violently adducted, the anterior part of the foot being meantime firmly fixed. Probably there was also at the same time some degree of torsion violence, applied at the tarsal-metatarsal articulation. The mechanism of production of the injury was, thus, not very dissimilar from that in Case I, though in the latter the fixation of the anterior part of the foot was not produced in the same direct way.

The resulting lesion was quite obvious on admission and was recognized as a dislocation of the metatarsus by Dr. Alex. Butler, one of the surgeons to the hospital. The anterior part of the foot was markedly abducted and somewhat everted. The internal cuneiform was prominent at the inner side, the fifth metatarsal at the outer side. The base of the first metatarsal bulged slightly on the dorsum of the foot. There was considerable tension of the skin and soft tissues. No crepitus was felt. Pain was considerable, and to relieve this temporarily the foot was fomented till the following day, when, in ordinary course, I visited the hospital. I had no hesitation in coinciding with the diagnosis made by Dr. Butler. Skiagrams were obtained, which confirmed our joint diagnosis (see Figs. 2 and 3). One was taken from above downwards, the other with the foot in profile. The former, though quite a good picture, cannot be said to give much support to the idea of there being any accompanying fracture, either of metatarsal base or of cuneiform. The latter shows the slight dorsal displacement of the proximal end of the inner metatarsals.

Under chloroform anaesthesia the dislocation was reduced. What seemed to be quite definite crepitus was felt during reduction, but the exact site of the crepitus was not clearly established, though it was thought to be at the site of the in-setting proximal end of the second metatarsal. Once the reduction was complete crepitus could not again be elicited, and, in view of the fact that no crepitus was felt before reduction, and that the skiagram gives no definite indication of fracture, the suggestion may with some justification be made that in this case the added torsion element mentioned in describing the mechanism of production of the dislocation, may have had the effect of producing first of all a dorsal displacement such as would permit of the second metatarsal slipping over or past the third cuneiform without fracture. Fig. 3 in any case makes it clear that some dorsal dislocation had occurred. In this case there was rather more difficulty encountered in accomplishing reduction than there was in Case I.

After reduction the foot was encased in plaster in slightly over-corrected and somewhat inverted position. Ten days later the patient was dismissed with his foot still in plaster.

Three weeks after the date of reduction the plaster was removed. There was slight thickening about the inner side of the tarsal-metatarsal articulation, but the position of parts was all that could be desired. The plaster was not reapplied, but firm bandaging with flannel was continued for some time and massage was instituted. The patient was encouraged also to begin carefully to use the foot actively. Function was well restored after three months.

CASE III.

T. H., aged 24, male, admitted to the Broadstone Hospital, Port Glasgow, on August 28th, 1911. Injured by falling a considerable distance in a shipyard. His right foot was seriously damaged by the fall, but this was the only injury of consequence he received. Exactly how the foot was injured neither he nor his mates could definitely say, and so the actual mechanism of production of the lesion sustained could not be established. The only statement made—for what is worth—was to the effect that the man did not alight on the injured foot. In view of the nature of the damage produced this may perhaps be open to some doubt, for, as I have already suggested in the general statement which has gone before, the resultant displacement of the metatarsals certainly somewhat suggests that the cuneiforms were impacted violently against the metatarsus, driving the first metatarsal inwards and the second, third, and fourth outwards. In any case, on admission to hospital, the nature of the injury was quite evident. I saw, and dealt with, the case on the day the injury was received. The complete inward dislocation of the proximal end of the first metatarsal was quite obvious; it could be felt, and indeed seen, projecting on the inner side of the foot. The next three metatarsals could be seen and felt projecting outwards and on the dorsal aspect of the outermost cuneiform and cuboid, the skin being stretched tightly over them. It was easily determined, on examination, that the second and third metatarsals were fractured close to their proximal ends, and part at least of the dorsal prominence was caused by the special projection of the sharp proximal ends of the distal fragments of these bones. The small proximal fragments were, however, also dislocated upwards. There was much bruising of the tissues of the dorsum of the foot, much effusion of blood into the tissues, and at one place the skin was almost torn through. Had reduction not been at once effected it is almost certain that the skin would have given way and sloughed.

The diagnosis was confirmed by means of the *x* rays. Fig. 4 shows quite clearly that the facts made out by ordinary methods of physical examination conformed with actuality.

Reduction was carried out without much difficulty on the same day, chloroform anaesthesia being employed, Dr. Butler anaesthetizing, and Dr. James Walker assisting me. The displacement of the first metatarsal was first corrected, and thereafter, by a reversal of the lateral pressure and adduction, the outer bones were readily replaced.

Plaster-of-Paris support was employed for four weeks; thereafter bathing, rubbing, and regulated passive and active movements being instituted. The result was in every way satisfactory, though stiffness persisted longer than in the other two cases.

Fig. 5. shows the complete correction of the displacement; it is a reproduction of a skiagram obtained about five weeks after the injury.

The publication of this paper has been delayed with a view to the searching of the records of the large Glasgow hospitals for cases of such injury. Only one case has been found in the last ten years' records of the Western Infirmary, which was at least labelled "Dislocation of metatarsus." The index title was all that one could obtain; access could not be had to any details, so that even this one case can hardly be counted. In neither of the other two hospitals could information be got from those likely to be aware of the occurrence of such an injury; in both, the radiographic experts could call to mind no example of such a condition as I have drawn attention to in this report.

This seems to make all the more remarkable the fact that, in a comparatively small hospital such as that at Port Glasgow, we should have had in so short a time, comparatively, three examples of a relatively infrequent lesion.

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CAPTAIN W. S. PATTON, I.M.S., in No. 50 of the New Series of *Scientific Memoirs by Officers of the Medical and Sanitary Department of the Government of India*, gives a description of the work done by himself in the etiology of Oriental sore in Cambay during June, 1910. His researches were chiefly concerned with the carrier of the parasite, the *Leishmania tropica*, from person to person, and he believes that he has made out a case against the bug. A *Stegomyia* of unknown species and a *Phlebotomus*, probably *Cabu* (Annandale), as well as ordinary house flies and lice, were all studied, but with negative results. In bugs, however (*Cimex rotundatus*), the parasites were found to flagellate in the stomach if the temperature was below 25° C., and this happened also in the nymphs. Complete development apparently did not take place in the adult bug, as flagellates were never seen in them beyond the tenth day, but in the nymphs Patton believes this does take place. In addition to these facts he brings forward epidemiological observations and clinical cases of people who were bitten by bugs and afterwards developed sores. Though all this is very interesting and suggestive, it does not absolutely prove that the bug is the regular intermediate host. It may be so in Cambay, but it seems just as clear that in other parts of the world—Bagdad, for example—it is not. It is evident that more work on the subject is required.

THE APPLICATION OF FUNGI AS STYPTICS.

BY

EDWARD KNIGHT, L.R.C.P. AND S.EDIN.,

GRAVESEND.

SEVERAL species of fungus were largely used in former times as applications for arresting haemorrhage, both by surgeons and the common people.

Dioscorides[1] mentions agaric (ἀγαρικον) as a fungus springing from the trunks of rotting trees, and states that three obols of it taken with water stays spitting of blood. The fungus was so-called because it was found at Agaria, in Sarmatia. Linnaeus in his classification of plants adopted the Latin term *Agaricus* for a large genus of fungi. But in pharmacy now the name "agaric" is usually given to various corky species of *Polyporus* growing on trees—as the *P. officinalis*, chiefly found on the larch, the *P. fomentarius* on the oak and birch, and the *P. ignarius* on the willow, plum, and cherry. During the eighteenth century the agaric of oak was often laid on bleeding wounds by French surgeons. Audouillet applied pieces to the mouths of bleeding vessels after several capital amputations with good results. It was also used successfully for checking bleeding by James Ford, a Bristol surgeon. Some differences of opinion were expressed as to how it acted.

Ford took the view that its effect was more due to its soft porous texture than to any specific styptic action, and then employed in its place a fungus, very similar to it in substance, that grows abundantly on casks in wine vaults. Afterwards he wrote an account of the success of agaric and the *Fungus vinosus* in amputations. Oak agaric was so much used in surgery as to be called "surgeons' agaric." It was gathered in autumn, and, the outer rind being removed, the yellow-brown substance within was cut into slices, which were beaten with a hammer to make them soft and pliable. No precautions seem to have been taken to render them aseptic, although fungi, it is well known, are often infested with the larvae of insects.

Agaric was highly commended in 1788 by Buchan,[2] in his *Domestic Medicine*, as a styptic; he went so far as to say that, being easily obtainable, it ought to be kept by every family in case of accidents. As 80,000 copies of this work were sold in Great Britain during the author's lifetime and it was translated into all the principal European languages,[3] it is not unlikely that his recommendation helped much to make agaric a popular remedy for bleeding with our forefathers. No work of the kind had been published before in this country. Cobbett[4] thought it tended to make its readers hypochondriacal, and in his *Advice to Young Men* he wrote: "Read the *Domestic Medicine*, and by the time that you have done you will imagine that you have all the diseases of which it treats." But the fungus prepared as described was useful for domestic purposes in another way. After being boiled in nitre, it made good tinder when fires were lighted with flint and steel, and, being extensively manufactured on the Continent, was termed "amadon" and "German tinder." Of late years agaric has received little notice in surgical works as a dressing for large bleeding wounds, but there is mention occasionally of amadon as a plaster for stopping bleeding from small blood vessels.

A fungus that has had a far more lasting reputation as a styptic is the giant puff ball, *Lycoperdon giganteum*, formerly known as *Crepitus lupi*, which it is said the Greeks called κρᾶνίον, on account of its resemblance, when full grown, to a human skull. It is of a globular shape, and commonly found growing in pastures during the autumn. At an early stage of its growth the outer covering, or peridium, is like white kid, and the pulp inside, or capillitium, firm and fleshy, but afterwards dry, spongy, and powdery. The powder, which consists of spores, among which are many fine filaments, has been used by the peasantry for centuries to stop haemorrhages. Recently an old countrywoman in Kent said she remembered when she was a girl and bled from the nose her mother would take her to an orchard, and, making her lie down on the grass, gather a puff-ball and apply the powder to her nose with good effect. As regards the use of the giant puff-ball in surgery, there is good evidence that it has been applied frequently to stop bleeding with excellent results. In 1560 it was recommended as a styptic by F. Wurtz, a German surgeon. Afterwards, in 1706, Helvetius wrote in a letter[5] concerning the fungus:

> But of all haemostatics, *Crepitus lupi*, commonly called "vesse-de-loup," a fungus of the family of Lycoperdons is the best, which stops bleeding in a surprising manner, without causing either pain or an eschar as vitriols do. The largest and most powdery of the Lycoperdons should be chosen; it is cut in slices and applied to the arteries or open veins. To remove these they are bathed with a little warm water, for it forms a kind of glue when mixed with the blood that is very adhesive.

This was written after seeing an operation for cancer during which the fungus was applied as a dressing. Adrien Helvetius[6] was born in Holland in 1661, his father being physician to the Prince of Orange. He went to Paris to vend certain drugs, and was so successful in treating many cases of dysentery with ipecacuanha, then a drug almost unknown, that he was awarded a handsome sum by the French Government for revealing the secret of his cures. Among his patients was the Duchess of Chaulnes, and this led to his being recommended by Colbert to the Dauphin. Thus he gained much renown as a physician.

The next observation on the styptic properties of the fungus seems to be a memoir presented to the Royal Academy of Sciences at Paris by Le Fosse, who was farrier to the King of France. In this he asserts, according to a translation which appeared in the *Gentleman's Magazine* in 1755:

> 1stly. That by applying the powder or dust of the *lycoperdon* or bulfist, to very considerable divided arteries in horses, the blood was stopped in a few minutes and the arteries cicatrized by this means alone without any succeeding haemorrhage.
>
> 2dly. That about 24 hours after the application of this remedy, a membrane or rather a pellicule was observed to cover the extremity of the divided artery with a small grume, which perfectly closed the orifice.
>
> 3dly. That the pulsation of the artery was very distinctly perceived there.
>
> 4thly. That the grume was conically shaped, the base closing the orifice, and the point turning inward.

Special commissioners having been appointed by the Academy to determine the truth of these statements, Le Fosse applied the powder of the fungus to several large arteries which had been divided in a mare.

> "The blood spurted," the Commissioner's report states, "with great for cefrom four arteries; he applied the *lycoperdon* powder to the stump, with only a cap of hog's bladder, and took off his dressing in a quarter of an hour, when three of the arteries were staunched, but the fourth bled fast; however, by applying a pinch of the powder to the bleeding artery, which he kept to it only with his finger, that also was staunched in six minutes." More of such evidence being given the report ends: "From what has been laid down it may be concluded that M. le Fosse has advanced nothing but the truth; however, we agree that the use of this powder for stopping of blood was not wholly unknown; but it is not certain that the blood of the most considerable divided arteries was ever attempted to be stopped by this remedy before." (Signed) Bernardde, Jussieu, and Bouvart.[7]

Within the last fifty years some practitioners in Ireland have pointed out the value of puff-ball as an application for controlling violent and constant haemorrhages. Sir William Whitla,[8] for example, remarks concerning this fungus:

> The writer has seen it used in formidable haemorrhages, dusted over the bleeding surface, and plugged into deep and tortuous wounds where the open vessels could not be reached with a ligature, and the rapid and effective manner in which it arrested bleeding was most surprising. He has seen it immediately arrest copious haemorrhages which he believes could not have been controlled by any other haemostatic. How it acts is unknown.
>
> The writer, in bleeding haemorrhoids or fissures, has had great satisfaction with the remedy which he uses plugged into large hollow suppositories and inserted into the rectum. He has been able to satisfy himself that he has saved life in this way, in a case in which the shock of an operation would have been fatal. He finds it to be an excellent remedy for epistaxis, and he plugs the nostrils with the fungus, leaving it *in situ* for several days, and always finds it act most satisfactorily in stopping the bleeding.

A poor woman in Ireland who had suffered from an open cancer of the breast for a long period, and had tried almost every form of dressing without allaying her sufferings or the constant haemorrhages, eventually sought the aid of a

country quack, who suggested the application of a puff-ball. The surgeon who attended her states:

From the day the patient commenced the use of this substance her sufferings were greatly mitigated, and she improved in health and strength. The frequent bleedings ceased, and the foul odour from the sore was greatly diminished; indeed, so admirably did the puff-ball act, that the poor woman lived in comparative comfort for seventeen years after the first appearance of the cancerous ulceration.

"Mr. Fagan of Belfast," he mentions, in giving further evidence of the value of puff-ball, told him "that when removing a large tumour from the neighbourhood of the orbit, he encountered the most violent haemorrhage from large arteries in the bone, which of course he could not tie, and which even pegging with pieces of wool failed to control, yet a small piece of puff-ball at once restrained all bleeding."[9]

In a case of alarming haemorrhage after miscarriage Dr. Duncan[10] of Tyrone introduced half of a puff-ball into the vagina and arrested the bleeding, when ergot and plugging the vagina in another way had failed.

Two cases of profuse bleeding from the nose were treated successfully in America with pieces of puff-ball inserted as plugs in the nostrils by Dr. Hall,[11] who wrote:

As a haemostatic for controlling the severer forms of epistaxis, I believe it has no equal. I have such confidence in it for this purpose that I am now never without it. I believe that no valid objections can be raised against its use on the ground that it is not sufficiently aseptic, while, on the contrary, it is to be preferred to many haemostatics on account of its non-irritating qualities.

If we compare these observations with those made before in the eighteenth century we find them much alike in their favourable estimate of the fungus as a styptic. I have seen troublesome bleeding after the extraction of a tooth readily stopped by a bit of puff-ball thrust into the empty socket when other styptics had been applied with no good result. If the plug is swallowed accidentally it can do no harm, as the fungus is quite innocuous when eaten. Heating the puff-ball in an oven to render the dressing aseptic does not appear to impair its haemostatic properties. One objection may be raised to its application to wounds of the face—that an ugly brownish stain is often left, but this usually soon disappears.

In times when more often than not excessive haemorrhage was checked with burning irons, boiling oil and tar, and powerful escharotics, the application in their place of soft non-irritating fungi must have been greatly appreciated by patients who were wont to suffer much under the hands of surgeons.

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AFTER-HISTORY OF GASTRO-ENTEROSTOMY FOR PEPTIC ULCER.

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THE present paper is a study of the after-history of 67 cases upon which the operation of gastro-enterostomy had been performed for ulcer of the stomach or duodenum. The operations have been done by many different surgeons, and for almost every clinical type of ulcer. They were performed at St. Mary's Hospital during a period beginning in 1904 and ending in April, 1910. In the most recent cases there was an interval of at least eighteen months between the operations and the inquiry as to the present condition of the patients, while in the older cases more than five years had elapsed.

The results here reported have been based upon the patient's freedom or otherwise from those symptoms which troubled him before the operation, or which still indicate active ulceration. Thus, when a patient, having been operated upon, reports himself entirely free from pain, sickness, and vomiting of blood, while he can enjoy ordinary food, and has perhaps gained in weight, his result is marked as "excellent" (E).

Supposing, however, that a patient states that he is little better, and that his pain, vomiting, etc., have not improved or that the improvement be only very slight, his result is recorded as "bad" (B).

It is remarkable that the great majority of all cases are easily classified into one or other of the above categories. If any improvement has taken place, it is in most cases complete. There have, however, been some in which the recovery has been only partial, and these are classified respectively as "good" and "fair" (G), (F).

Where results are recorded as excellent there is no possible doubt that this is a true description of the case, for, as a rule, the patients themselves are most enthusiastic when referring to their condition. Similarly, there has been no hesitation in stamping any case as failure when the patient is still troubled with symptoms; for, even though pain, vomiting, etc., may have been slightly reduced, if the patient is still conscious of disease in the stomach or duodenum he has not been cured by the operation.

THE MORTALITY OF THE OPERATION.

Out of 92 cases there were 7 deaths immediately following the operation (7.6 per cent.). All these deaths occurred amongst the first 39 cases; throughout the last 53 cases there was no death.

The causes of death were as follows:

1 general peritonitis due to perforation of the ulcer just after the operation.
1 general peritonitis from leakage of the anastomosis.
1 septic bronchopneumonia.
2 collapse.
2 causes unknown.

The death of the first case was almost unavoidable; it could, perhaps, have been prevented by invaginating the ulcer at the time of the operation, but, as the liability of the ulcer to perforate can scarcely be ascertained during the operation, invagination is rarely performed. This case was an unfortunate accident. The second case—due to leakage—was the result of faulty technique. This was one of the earliest cases of the series. Where the ordinary method of suture is employed leakage at the site of anastomosis is very rare. In one case, in 1904, Murphy's button was used; the patient died soon after the operation, from melaena. The third patient died from bronchopneumonia, quite independently of the special nature of the operation. This patient would probably have died whatever operation had been performed.

Two patients died of collapse during the first week. The collapse may have been due to the gravity and duration of a serious operation performed upon a patient probably exhausted by a succession of haemorrhages, and a long period of semi-starvation from continued vomiting. Another cause of the collapse may have been haematemesis or melaena following operation. This is not an infrequent cause of death. In neither of these cases, probably, did the operation contribute to the speedy death of the patient, for in the first instance—death due to collapse from exhaustion and low vitality—the patient would have died if not operated upon; and in the second—death from haemorrhage—the operation probably had no part in starting the bleeding.

Thus of the 5 cases of death the causes of which are known, 2 died owing to unfortunate accidents, 2 died in spite of the operation, and in 1 only was death due directly to the operation—the case in which the anastomosis leaked. So much has the technique improved during the last few years that this cause has been practically eliminated.

AFTER-HISTORY OF 68 PATIENTS.

Of the 92 cases of the series 68 have been traced; of these 3 have died in the interval (4.4 per cent.) Probably others of the 92 cases not traced have died, and this would account for the failure to trace them. From the accounts furnished by their friends, it appears that 1 died of perforation, 1 from "a recurrence of the malady" (? haematemesis), and 1 from a cause unknown. Thus the total mortality of the operation, *plus* that of the uncured ulcer after operation, is 10.9 per cent. These figures should be compared with the mortality of the disease when treated

by medical means. Apparently the statistics here collected would show that the immediate danger of gastro-enterostomy is serious (7.6 per cent.), but under present conditions it is exceedingly slight; there has, for instance, been no death in the last 53 cases, that is, since 1908.

The general results of the series can be stated in 67 cases.

Classification of Results in 67 Cases.

Result.	No. of Cases.	Percentage.
E.	29	43.2
B.	26	38.8
G.	6	8.9
F.	6	8.9

Thus nearly half the cases were in no way ameliorated. Reckoning E and G together, and B and F, we have approximately 52 per cent. cured and 48 per cent. not improved. Ample proof is thus afforded that gastro-enterostomy is not indicated promiscuously for all kinds of peptic ulcer. At the same time, it is an important conclusion that the results are very sharply defined, inasmuch as 55 of the cases are either completely cured, or in no way improved, while only 12 cases are partially relieved. Supposing, on the one hand, the bulk of the cases were partly cured and only a small proportion showed a decisive result of good or bad, then the results would not be so significant, but as the effect of operation is so markedly successful in 43 per cent. and so hopelessly bad in 38 per cent. it is clear that there must be some very real difference in the etiology of the disease, or the pathology, or the exact performance of the operation which renders surgical treatment thoroughly successful or absolutely useless.

Age and Sex.

If the age of the patients and its effect on the prognosis be examined, it will be seen that, generally speaking, the older the patient the better the outlook. Thus:

Table of Ages.

Age.	No. of Cases.	Result.	
		Excellent.	Bad.
Below 20...	1	0	100 %
20 to 30	13	23 %	77 %
30 to 40	14	28 %	72 %
40 to 50	20	65 %	35 %
50 to 60	14	72 %	28 %

The age limits were 19 and 61, and the average age was 40.

From this table it would seem that the age of the patient is an important factor, but this is probably only apparent, for the type of ulcer varies with the age.

Again, the question of sex seems to influence the prognosis. Of 63 cases, there were 35 males and 28 females, and approximately one-third of the females and two-thirds of the males were cured. There were 23 males and 11 females over the age of 40; of the 23 males 20 were cured, and of the 11 females only 4 were cured.

Duration of Symptoms.

The duration of the symptoms is some indication of the chronicity of the disease; but on examining the series it has been found that no relation exists between the chronicity and the result of operation. Some of the patients had suffered for less than one year, while others had had symptoms for more than fifteen years; but the number of "cures" is distributed equally. It has been suggested that gastro-enterostomy is suitable for the chronic ulcers, and not for the acute variety; but these cases afford no evidence to support this.

Character of the Pain.

The character of the pain, however, is of great importance, for the figures show that the result of operation depends very largely upon the time after food at which the pain occurs. This varies from immediately after a meal to one and a half hours, and, in proportion as this interval is long, so is the prognosis good. Clinically, the ulcer is frequently diagnosed as gastric or duodenal by a consideration of this feature of the pain, and it will be seen from the table below that cases of duodenal ulcer, as a rule, do much better after this operation than cases of gastric ulcer. Physiologically, duodenal and pyloric ulcers may be considered together, both forms tending to cause stenosis.

Position of the Ulcer in 64 Cases.

Position.	No. of Cases.	Result.	
		Excellent and Good.	Bad and Fair.
Gastric	24	38 %	62 %
Duodenal and pyloric	37	70 %	30 %
Not stated	7	—	—

Mode of Action of Gastro-enterostomy.

The question whether the ulcer is gastric or duodenal is of far greater importance than either age or sex. The pathological effects of the two forms of ulcer are usually quite different. The important pathological effect of duodenal and pyloric ulcer is pyloric stenosis, and it is probably in the relief of this condition that gastro-enterostomy has its greatest usefulness. The anastomotic opening provides a means of drainage, and this is probably the secret of the success of the operation in so many cases of this kind. For example, cases of pyloric carcinoma owe their relief after this operation to simple drainage. Therefore, whether the actual ulcer be healed or no, the stenosis and its attendant train of symptoms is certainly cured, and the first effect of this is to maintain the stomach at rest and relieve it of a volume of fluid continually in contact with the ulcer. Now just as drainage of any other hollow viscus, such as the bladder, promotes its recovery from a septic state, so drainage of the stomach probably has a most important bearing upon its recovery from an ulcer which is in a septic and progressive condition.

Gastric drainage may also be accomplished by means of lavage, though not so perfectly as by gastro-enterostomy, for, in the case of lavage the fermenting fluid is removed at intervals only, whereas by anastomosing the stomach with the jejunum a continuous drainage is maintained and a retention of irritating fluid never occurs. One of the cases was *x*-rayed after a bismuth meal, and the fluid was seen to pass very quickly out of the stomach, so that there was scarcely time to obtain good photographs.

Though the patient owes much of his distress to dilatation caused by stenosis, and its relief from this condition is easy to understand, undoubtedly a true healing of the ulcer with cicatrization is promoted in those cases where there has been frequent bleeding, for haematemesis and melaena are often completely arrested. Some claim that the healing of the ulcer is due simply and solely to the drainage effected by the operation, which prevents its constant contact with septic fluid, but, while drainage clearly relieves stenosis, some other factor is probably concerned in the healing of the ulcer.

Of the pathogenic factors associated with peptic ulcer, one of the most important is hyperchlorhydria. Of those cases in which a test meal analysis was performed, it was found that the vast majority suffered from a hyperacidity; in fact, one of the surest aids to the diagnosis of simple ulcer is the presence of this excess of acidity. Indeed, it has been shown that experimental gastric ulcer can only be produced or maintained when the acidity of the stomach is above the normal (Bolton). Hence it follows that the relief of this condition should be one of the first aims in the treatment of peptic ulcer.

The administration of sodium bicarbonate destroys the acidity; but in gastro-enterostomy we have a more efficient method, for by this operation the acid fluid is not allowed to accumulate.

The effect of the operation on hyperchlorhydria can be determined by the analysis of test meals by the usual method; and from tables of such cases, published by

Dr. W. H. Willcox, it can be seen that the total amount of acid is materially diminished.

From a study of the analysis before operation some idea can be formed of the probable success of the operation, for the results bear some relation to the amount of acidity. Thus, reckoning the total acidity in terms of hydrochloric acid, we have:

Acidity before Operation.

Total Acidity.	Result.	
	Excellent.	Bad.
Between 0.12 per cent. and 0.19 per cent. ...	5	3
Between 0.22 per cent. and 0.3 per cent. ...	13	3

Reckoning 0.15 per cent. as the normal, we gather that those cases with a definite hyperchlorhydria from 0.2 per cent. to 0.3 per cent. show better results than those cases not associated with hyperacidity; and it is in accordance with theoretical considerations that this should be so.

At first sight it might be imagined that the diminution of acidity after gastro-enterostomy is due to regurgitation of the alkaline juice of the duodenum into the stomach. This cannot be the case to any great extent, however, for the amount of bile in test meals drawn off is, as a rule, so slight that not sufficient alkali can have regurgitated to have neutralized the excess of acid. In some cases no bile at all is found; in others, only the slightest trace, showing that the amount of regurgitation is inappreciable. But it is easy to understand how the acidity is corrected when we remember the part played by the anastomosis in the drainage of the stomach. By these means accumulation of the gastric contents is prevented, and although there may be a hypersecretion of acid, the rapid drainage into the jejunum prevents it from raising the percentage of acid in the gastric juice.

Thus does gastro-enterostomy, by drainage of the stomach, bring about the two essential conditions for the cure of ulcer—namely, rest and normal acidity. Rest is so important for recovery from disease of any other part of the body that it is only to be expected that it should be imperatively necessary for the stomach and duodenum. The degree of rest secured by this operation for the duodenum is almost absolute, for the first part of the duodenum —where the ulcer usually occurs—is thrown into a state of complete physiological inactivity. This may partly account for the better results in the case of the duodenum.

THE OPERATION AND AFTER-TREATMENT.

I.

From what has been stated above, it is clear that a cure of the disease depends upon permanence of the anastomotic opening, for as soon as the drainage becomes ineffective the former conditions recur, and fresh ulceration is likely. In some cases of cicatricial pyloric stenosis it is impossible for the opening to close, for any fistula will remain open as long as there is obstruction below. This may be an additional reason why the operation is so successful in cases of pyloric stenosis. But when the ulcer does not cause an obstruction of the pylorus, closure of the artificial opening is possible, and perhaps probable.

In only two cases has it been possible to determine the size of the opening, and in each case it was still patent.

CASE I.—J. C. Duodenal ulcer, and slight degree of hour-glass contraction of the stomach. Gastro-enterostomy had been done near the cardiac end. April, 1910: Laparotomy, stomach opened, and anastomosis admitted three fingers. The pylorus admitted one finger, and was artificially stenosed.

CASE II.—H. S. Gastric ulcer. Gastro-enterostomy in January, 1909. Readmitted August, 1910, for melaena, etc., and laparotomy was performed in December, 1910. The opening admitted three fingers, and the pylorus was artificially stenosed. Three months after the patient was quite well.

When, however, the stenosis is due to pyloric spasm associated with an ulcer in its vicinity, free drainage of the stomach will lead to a relaxation of the spasm, as in other parts of the body. The function of the pylorus will then be restored and the gastro-enterostomy opening will fall into disuse, as all such fistulae do, when the obstruction to the *viae naturales* is relieved. In this way the ulcer may be healed and the patient permanently cured. But, on the other hand, the old condition of affairs may be reproduced when the anastomosis closes, and it is possible that a further ulcer will be formed, thus accounting for some of the many relapses. If this be the case, a measure perhaps indicated is artificial closure of the pylorus so as to reproduce most nearly that type of case—permanent pyloric stenosis—which does best after gastro-enterostomy. In two recurrent cases of this series this was done, but not sufficient time has yet elapsed to judge of the results.

In those cases in which the pylorus is quite patent and no obstruction exists it is difficult to see how gastro-enterostomy can be of much benefit, for one of the two important morbid conditions—retention of septic fermenting fluid—cannot exist, and the other—hyperacidity—can be little relieved by the operation, for there is already sufficient drainage through the pylorus. Such cases are those of gastric ulcer situated well away from the pylorus, with little scar contraction and atonic dilatation of the stomach. It is probable that this is the type which reacts so unfavourably to surgical treatment. Artificial closure of a healthy functional pylorus is, however, a serious measure, and one hardly likely to be of any use in such cases.

II.

In earlier days a much debated question was whether the anastomosis should be made on the anterior or posterior wall of the stomach. Latterly, however, it has been decided that what is known as posterior gastro-enterostomy is the operation of choice, and unless there be some strong contraindication, such as the presence of adhesions, the anterior operation is never performed. Throughout this series only one or two anterior operations have been done, and then only because the posterior was not possible. We cannot, from these few cases, judge the relative merits of the two operations, but it may be accepted that the reasons set forth in favour of abandoning the anterior operation are very cogent, and that the result of the operation as practised to-day must be correspondingly better.

III.

A further point of discussion has been the position of the anastomosis on the posterior wall—that is, whether it should be placed near the cardia or pyloric antrum. Unfortunately, it has been impossible to obtain the records of the exact position of the opening, and no statistical conclusions can be drawn from this series. This point, however, is probably of some importance, for the question ultimately resolves itself into this, Which position will make for the best drainage?—drainage being the aim of gastro-enterostomy. Bismuth meals show that, immediately after eating, the food occupies the fundus of the stomach for a short time, while the pyloric antrum remains comparatively empty and contracted. Later the antrum dilates, receives a portion from the cardia, and a series of churning movements commence, the semi-digested mass being finally ejected through the pylorus. As the motor activities of the two halves of the stomach differ, so do their secretory functions. The fundal cells furnish the acid, and probably the pepsin also. Drainage of the fundus will relieve it of its distension by preventing its acting as a receptacle, and the fundus will discharge its contents immediately, so that gastric digestion will scarcely take place, and no accumulation of hydrochloric acid, which is secreted by the fundal glands, will occur.

But when the anastomosis unites the pyloric antrum with the jejunum drainage will not occur immediately, but only when the antrum receives its portion of the meal from the fundus. The normal churning movements of the antrum will immediately drain the contents into the jejunum, and the fundus will consequently discharge itself into the antrum more quickly than normal. Thus the difference is chiefly in the rapidity of drainage. When the opening is near the fundus, drainage is more rapid than when near the antrum, and acid will scarcely be present.

From these considerations it is seen that the result of operations will be better in cases of hyperchlorhydria when the opening is near the fundus, whereas for pyloric stenosis the anastomosis should be made with the pyloric antrum. This question gives rise to many more reflections, which, however, cannot be considered here.

Other differences in methods of operating are the formation, or not, of a loop of jejunum, and the size of the opening. The "no loop" operation is almost invariably performed at present, and the size of the opening should err rather on the side of capacity, in order to obviate premature closing. As in the previous cases, the notes of this series do not yield sufficiently full details, and no conclusion can be drawn.

POSSIBLE CAUSES OF THE FAILURES.

1. *Recurrence of the Original Ulcer, or Its Failure to Heal.*

(*a*) Closure of the anastomosis. The causes of this have already been considered.

(*b*) Persistence of those conditions which either gave rise to the ulcer or prevented it from healing.

The causes of gastric and duodenal ulceration have been discussed freely of late, and some light has been thrown thereon by Dr. Bolton; but it is not yet known definitely what gives rise to the ulcer. However, there are some suspected causes, such as oral sepsis. This condition should certainly be corrected some days before operation, and the mouth be kept in good condition.

The second and most important question is that of diet. The patient, and often his doctor, regard the operation of gastro-enterostomy as the complete and final means of cure, instead of realizing that it is no more than an excellent means of helping the stomach to cure itself. He forgets that careful dieting over a long period, together with frequent administrations of alkali, are almost as necessary and important as the operation. Many cases of gastric ulcer are cured by these means alone; therefore, will it not add greatly to the chances of complete and permanent cure if operative treatment is supplemented by careful medical treatment? Gastro-enterostomy is usually employed in cases which have failed to react to medical treatment, though in nearly every case under such a régime there is improvement, relapse occurring when the patient resumes his former dietetic life. The carelessness of the patient with respect to his diet is probably the commonest cause of relapse in this series—made up of hospital patients who, unfortunately, are often unable to select their food. But where gastro-enterostomy is followed by carefully regulated medical treatment, not necessarily strict, but reasonably moderate, the best results can be obtained.

2. *Formation of Jejunal or Gastro-jejunal Ulcer.*

Several cases have been reported, some being discovered at the operation for perforation. With Dr. Bolton's work in view, we may attribute such ulceration to hyperchlorhydria. There may be other causes, the nature of which we do not know, but so long as we remember that an experimental ulcer can be produced only in the presence of hyperacidity, we have at least one means of prevention in the administration of alkali and judicious dieting referred to above.

3. *Apparent Relapses.*

In these cases the ulcers are probably healed after gastro-enterostomy, but notwithstanding, the symptoms of pain and perhaps of vomiting and haematemesis persist, or return at a varying interval.

1. *The Pain of Adhesions.*—Simple ulcers of the stomach and duodenum give rise to adhesions between these organs and the neighbouring serous surfaces. In the majority of these cases the patient suffers no pain, but when adhesion exists between the anterior wall of the stomach and the abdominal wall, pain is probably a persistent symptom, for the parietal peritoneum is known to be very sensitive. Each time the stomach moves relatively to the abdominal wall, as it does after meals, there will be a drag on these adhesions, and consequently a pull on the parietal peritoneum. In such cases the pain will be very obstinate, entirely unrelieved by simple gastric sedatives, such as sodium bicarbonate, hydrocyanic acid, etc. In those cases in which the ulcer was noted to be on the anterior wall of the stomach at operation and the patient shows no permanent improvement, adhesions may be suspected as the cause of failure.

2. *Carcinomatous Change.*—It is known that about 60 per cent. of cancers of the stomach arise on the sites of old simple ulcers. Chronic and unhealed peptic ulcers are specially liable to this form of degeneration, but it is possible that carcinoma may originate on the scarred site of an old ulcer healed by gastro-enterostomy. If this be the case there will be a relapse of the symptoms, with the other signs usually attendant on cancer of the stomach.

GENERAL CONCLUSIONS.

Reviewing the results of this series broadly, we see that as a general rule gastro-enterostomy is excellent for men of middle age who suffer from duodenal ulcer, especially if associated with some pyloric stenosis, whereas failure generally follows operation in cases of young women suffering from gastric ulcer.

Thus, of 12 females under 35—all subjects of gastric ulcer—10 cases were complete failures, and 2 only were successful. Some of these cases were in young and anaemic women, and on opening the abdomen no ulcer was found. There were 4 cases in which no ulcer was discovered, and of these 3 did badly. Probably in these 4 cases no ulcer existed, and it is clear that operative treatment could have been of no avail.

A more exact knowledge of the symptomatology and morbid anatomy of the ulcer might enable us to predict, with even more confidence, the result of gastro-enterostomy.

SUMMARY.

1. The results of treatment by gastro-enterostomy are generally either excellent cures, or complete failures.
2. The immediate mortality of 92 cases is 7.6 per cent., but of the last 53 cases it is 0.
3. The general results are: 43 per cent. excellent; 38 per cent. bad.
4. Prognosis is much better when the patient is over 40.
5. According to sex, 69 per cent. of males are cured; 28 per cent. of females are not improved.
6. The duration of symptoms is of no assistance in forecasting the result of operation.
7. The length of time elapsing between the meal and the onset of the pain is of great importance; the longer it is the better the outlook.
8. Duodenal ulcers yield very much better results than gastric ulcers; the gastric give 38 per cent. of cures, duodenal 70 per cent. of cures.
9. Cases of pyloric stenosis yield the best results.
10. The degree of hyperchlorhydria is of importance, cases showing a total acidity of over 0.2 per cent. reacting well, cases with a normal acidity doing badly.
11. The improvement effected by the operation is probably due to the relief of dilatation, pyloric spasm, and hyperacidity by the drainage of the stomach.
12. Failures may follow the closing of the anastomosis.
13. The position of the anastomotic opening on the posterior wall of the stomach may be of great importance.
14. Failures may be due to:
    - (*a*) Recurrence, or failure to heal of the original ulcer.
    - (*b*) Formation of jejunal ulcer.

    Apparent relapses:
    - (*a*) Adhesions—causing pain, vomiting, etc.
    - (*b*) Carcinomatous degeneration.

15. Cases where an ulcer is not found at operation do badly.

In conclusion, I would like to express my thanks to Mr. J. Ernest Lane, F.R.C.S., and the other members of the surgical staff of St. Mary's Hospital, who have kindly given me permission to use their cases.

THE Illuminating Engineering Society (32, Victoria Street, London, S.W.) has done good service in following a recent American precedent and reprinting from its official organ for general circulation a pamphlet with the title *Light and Illumination: their Use and Misuse.* It gives a few simple recommendations on this subject. The reader is told concisely what kind of illumination to avoid, how to obviate the evil of glare and dazzle, how to concentrate the light where required, and how to secure its effective distribution. He is also assisted in the choice of globes, shades, and reflectors, and instructed in the part which walls and ceilings play in the lighting of home, shop, office or factory. To do all this within the compass of a threepenny pamphlet, and to do it without treading upon any commercial corns, or showing any preference for this or that illuminant, is a useful achievement. The instructions are helped out with several illustrations which show even more clearly than the text what kind of lighting is deficient and prejudicial to the sight.

A METHOD OF PERFORMING GASTRO-JEJUNOSTOMY.*

By KENNETH BLACK, F.R.C.S.Eng.,
EX-SURGICAL RESIDENT AT GUY'S AND ST. THOMAS'S HOSPITALS, MANCHESTER ROYAL INFIRMARY, AND NOTTINGHAM GENERAL HOSPITAL.

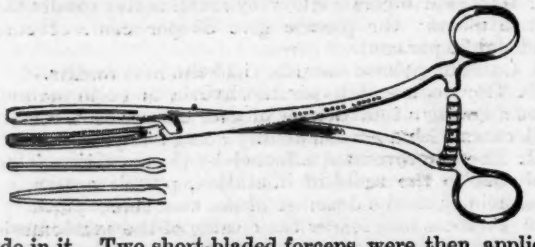
I shall endeavour to explain a method, slightly different from the ordinary one, of performing the operation of gastro-jejunostomy—a method adopted in 26 consecutive operations for the following lesions:

	Operations.
Gastric ulcer, with or without adhesions ...	11
Pyloric stenosis and gastric dilatation the result of simple ulceration	6
Gastric dilatation associated with enteroptosis	1
Severe haematemesis from simple ulceration ...	1
Duodenal ulcer	1
Carcinoma of the stomach	1
Carcinoma of pylorus	5
	26

Of these operations two only had fatal results. In one case (of very advanced carcinoma of the pylorus) the patient died from exhaustion, two days after the operation; and in the other (of duodenal ulcer) the patient, who had previously undergone an operation for some pelvic disease, died, three weeks after an apparently successful gastro-jejunostomy operation, from the effects of an abdominal abscess, the cause whereof was not ascertained, but which, it is believed, was unconnected with the gastro-jejunostomy operation.

Method of Operating.

After the abdomen had been opened in the usual way, and the diseased area examined, the stomach, transverse colon, and great omentum were turned over on to the abdominal wall, so that the posterior wall of the stomach lay uppermost. The transverse mesocolon was then cut through and the stomach drawn through the opening



made in it. Two short-bladed forceps were then applied, one to each end of the portion of stomach selected for junction with the jejunum. This portion of stomach—that is, the portion lying between the two forceps—was not "clamped" with a forceps, but was left "free." The omission to check, by clamping it, haemorrhage and gastric contents, was a special feature of the modified method of operating which I am attempting to describe. The edges of the cut in the transverse mesocolon were fastened, with a few stitches, to the stomach wall—an important step as a provision against the possibility of the small intestine subsequently passing through the opening and becoming strangulated.

The next step was to select a portion of the jejunum for junction with the stomach. Each end of the selected portion was grasped with a short-bladed clamp forceps of the same kind as had been previously applied to the stomach. Thus there were four clamp forceps in use, two grasping a portion of the stomach and two grasping a portion of the jejunum. By means of these two pairs of forceps the portions of stomach and jejunum which were to be connected were brought close together and held side by side. Sponge cloths were then packed round the exposed portions of stomach and jejunum.

With a Lembert suture the outer coats of the stomach and jejunum were then stitched together for a length of about 4½ in. Openings of the requisite length (3½ in. to 4 in.) were made in both the stomach and the jejunum. When the stomach was opened its larger vessels were secured and ligatured. This was a special feature of the operation, the objects being to check haemorrhage during the operation and to prevent post-operative haemorrhage.

The next step was by stitching to join the opening in the stomach to that in the jejunum. There were four rows of stitching. The first row, already mentioned, was simply peritoneal stitching. The second row, just in front of the first row, joined one side of the opening in the stomach to the corresponding side of the opening in the jejunum; this row of stitches secured the whole thickness of the stomach wall to the jejunum. And, similarly, the third row, joining the other side of the opening in the stomach to the other side of the opening in the jejunum, extended to the whole thickness of the walls of the stomach and jejunum. This third row closed the openings in and completed the junction of the stomach and jejunum. The fourth row of stitches, similar to the first row and corresponding to it, on the other side of the openings, was simply a Lembert peritoneal continuous suture. In doing this stitching a straight non-cutting needle was used, and, with the object of facilitating the work of the operator's assistant, care was taken that all the stitching should be "towards" the operator.

The sponge cloths were then removed and the stomach turned down and replaced in the abdominal cavity, which was then closed in the usual way.

Advantages.

The essential difference between this method of operating and that usually described and practised is that in the latter, with the object of checking haemorrhage and stomach contents, the portion of the stomach selected for the opening is clamped throughout its entire length with the blades of a long-bladed forceps, whereas in the former only the two ends are grasped with forceps, and the portion of stomach lying between these two forceps is not clamped at all.

The method described by me seems to have the following advantages:

1. In the ordinary method reliance has to be placed solely on the tightness of the stitching for the prevention of post-operative haemorrhage into the stomach, which not infrequently occurs and has even proved fatal. In the method described by me, on the other hand, it is possible, when opening the stomach, readily to see and ligature the larger vessels in the stomach wall; this overcomes the risk of post-operative haemorrhage.

2. When long-bladed forceps are used it is in practice by no means easy in some cases to get the stomach "nicely" between the blades. On the other hand, the short-bladed forceps can be applied quickly and with ease. Also, when the long-bladed forceps are used, there is more danger of damaging the stomach walls unless rubber tubing is used to cover the blades.

3. When long-bladed forceps are used it is difficult in practice, owing to the thickness of the stomach walls, to clutch hold of and clamp a sufficient length of the stomach; hence the length of the opening which can be made in the stomach is limited, for obviously the opening cannot be greater than the length of stomach clamped by the forceps. But in practice, even the whole of this length, limited though it is, is not available for the opening, because the "tension" at each end of the clamped portion of the stomach is found to be so considerable as to prevent ease of stitching, and obviously the opening cannot be given a greater length than that which can be stitched up with accuracy. On the other hand, in the modified method of operating described above, an opening 3½ to 4½ in. long can be made with ease. The operation of gastro-jejunostomy has more satisfactory results, and the risk of regurgitant vomiting is obviated if the opening is a large one.

It is easier, and takes less time, to perform gastro-jejunostomy in the way described above than in the way more commonly adopted.

It may be urged that the modified method described by me has some drawbacks. Let us consider them.

1. The flow of blood during the operation may interfere with accuracy of stitching. This is true only to a limited extent, for bleeding from the cut is mostly checked, as already mentioned, by ligaturing the larger vessels in the stomach wall, and the oozing from the smaller vessels is dealt with by the operator's assistant, who wipes away the blood as each stitch is inserted.

2. There is a risk of the patient straining when the stomach is open and forcing out some of its contents. This also is true only to a limited extent, for the stomach

* Read before the Nottingham Medico-Chirurgical Society.

ought to be washed out thoroughly before the operation; and even if anything does trickle out during the operation, it can easily be wiped away. In practice I have never found any harm result. It is suggested that the advantages of the method described by me more than counterbalance its drawbacks.

The short-bladed forceps used were made by Messrs. Down Bros.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

SUBACUTE OSTEITIS OF THE EPIPHYSIS OF THE OS CALCIS.

RECENTLY attention has been drawn to the changes that take place at the epiphyses, as the result of an injury, which at the time may appear trivial, but which if neglected may be followed by more serious consequences. In all doubtful cases it is wise to have an *x*-ray examination made, since the most careful clinical examination often fails to detect an abnormality, which at once becomes revealed when the part is radiographed.

Within the last year I have had two cases, both of which occurred in boys of the age of 13 years, and in both cases the symptoms and signs were similar.

A healthy, well-developed schoolboy was brought to me with a request that I would photograph his foot, which was painful and caused him to limp.

The history was that in June, 1911, he went to London to see the Coronation, and did a great deal of walking and standing. He then noticed a pain in his heel. The pain has persisted off and on up to the present time, was worse after he had been walking, or when his heel was subjected to the slightest blow. It was particularly noticeable whilst he would be in the act of drawing off his boot. From time to time there had been slight swelling of the heel, but he had never noticed any bruising. In consequence of his disability he was unable to take his proper share in the games.

There was some tenderness over the back of the heel, with slight swelling on either side of the insertion of the tendo Achillis. Contraction of the muscles of the calf of the leg caused slight pain. There was no wasting of the muscles, and the movements at the ankle joint were unimpaired. His gait was what one would expect in this condition. To save his heel from impact with the ground he walked on the forepart of the foot, with the heel raised, and the knee slightly flexed.

Radiographic Examination.

The radiographic plates that were taken showed the following condition: The shape and structure of the bones were normal with the exception of the epiphysis of the os calcis. This was seen to be very irregularly ossified, and there was an abnormal gap between the epiphysis and the body of the os calcis. The epiphyseal plate appeared to be displaced upwards and backwards, and there were calcareous deposits in the lower part of the tendo Achillis.

I take it that this condition had originated as a subacute osteitis in the neighbourhood of the epiphysis, due to strain or to excessive walking on hard pavement in one not accustomed to it, and that this osteitis had led to weakness of union between the epiphysis and body, with subsequent partial displacement.

A very similar condition affecting the tubercle of the tibia is now well recognized, being known as "Osgood Schlatter's disease of the tibial tuberosity," and it is reasonable to assume that a similar condition may be met with at the epiphysis of the os calcis, which, though to a great extent protected by its dense fibrous covering, is, from its position, liable to injury.

The treatment recommended is to supply support to the heel. This can be done by means of strapping shaped similar to a jaw bandage. The central part is placed over the heel; the ends are then carried forward round the ankle joint and crossed. The patient should also be instructed to wear a soft pad inside the boot.

WILLIAM EDMOND, F.R.C.S.,
Medical Officer, Electrical Department, Salop Infirmary.

IODINE IN CORNEAL ULCER.

WITH reference to the case of corneal ulcer treated by iodine, reported in the BRITISH MEDICAL JOURNAL of January 25th, p. 169, by Fleet Surgeon C. T. Bishop, I wish to mention that for the past sixteen months I have treated all cases of ulcers and ulcerations of the cornea, irrespective of cause, that have come to my surgery, and also those occurring in my private practice, with daily applications of tr. iodi. In all cases so treated I have had, to quote Fleet Surgeon Bishop's own words, "very striking results."

I am of opinion that this is one of the most satisfactory methods of treatment for nearly all cases of ulcer of the cornea, due attention being paid at the same time to the treatment of the cause, whether local or constitutional or both.

The method I employ is the following—namely: The eye having been previously anaesthetized with a few drops of 4 per cent. solution of cocaine, the end of an ordinary wooden applicator is sharpened to a pin's point and a little cotton-wool firmly wound round it. The point is dipped in the tincture of iodine and the surface of the ulcer gently touched with it. The conjunctival sac is next thoroughly irrigated with distilled water.

May I call Fleet Surgeon Bishop's attention to May and Worth's *Diseases of the Eye* (second edition, p. 120), where the above method of treatment is described?

G. CANILLA, L.& L.M.R.C.P.I.&S.I.,
Consulting Medical Officer to the Calamon Mining Company and to the Cordoba Copper Company.
Cordoba, Spain.

INTERNAL TRAUMATIC VAGINAL HAEMORRHAGE.

THE following case of internal traumatic vaginal haemorrhage resulted in the formation of a perivaginal haematoma after a normal labour.

On January 23rd, at 10 a.m., I was called to see a multipara in labour. On examination I found a left occipito-anterior presentation, the membranes not ruptured, the os partially dilated, and an old perineal laceration. The pains were of normal strength and duration. I left the patient and returned at noon. The head was now on the perineum and was carefully conducted out of the vagina, the patient being under light chloroform anaesthesia. The placenta was expressed in due time by Credé's method, and I left the patient quite comfortable to the midwife in attendance.

At 2 p.m. a message came that the patient complained of pain, which I took to be ordinary after-pains, and sent two 1-grain opium pills with instructions. At 6 p.m. I was again called to see the patient on account of pain and faintness. At this time she seemed to be suffering considerably, was pale and cold with a quick pulse. On examination in the cross-bed position the vulva gaped widely; the mucous membrane of the post-vaginal wall was very congested and everted, presenting the appearance of an inverted placenta at the vulvar orifice; the whole posterior triangle of the anatomical perineum was very tense and bulging, and the vaginal canal practically occluded; the cervix uteri could not be reached by the finger. The fundus uteri was globular, firmly contracted, and raised above the level of the umbilicus. Rectal examination disclosed to the left and behind a tense well-defined swelling about the size of a large orange. A hypodermic injection of morphine and ergotinin was administered.

At 9 p.m. the rectal swelling had increased considerably; the pulse became faster, and the patient more collapsed, so I decided to have her removed to the Doncaster Infirmary, where I again saw her at 2 a.m. on January 24th, with Dr. Henry Clarke. At this time there was a well-marked ecchymosis extending from the anus laterally on both sides to the outer limit of the ischio-rectal fossae. Dr. Clarke, in attempting to reach the cervix uteri, caused a rush of blood from the vagina, and consequent disappearance of the vaginal obstruction and of the tumour to be felt from the rectum. Then, with careful examination under the altered circumstances, we found, high up in the vagina on the left side, a tear which, owing to the congested condition, looked like a punctured wound of sufficient size to admit the tip of the little finger. This was stitched in the usual way, and the patient has gone on well.

The foregoing notes I consider interesting and instructive. Interesting because, according to Jellett, "internal traumatic vaginal haemorrhage" sufficient in amount to require treatment is a very rare condition; there were only 10 cases in 20,000 deliveries at the Rotunda Hospital.

Again, the labour was not unduly prolonged; the child was delivered naturally—in fact, the case was normal in every respect. It is instructive in its warning not to regard all pains after labour as trifling after-pains.

Carcroft, Doncaster. C. Sheahan, L.R.C.P. & S.I.

Reports
ON
MEDICAL AND SURGICAL PRACTICE IN HOSPITALS AND ASYLUMS.

TONGSHAN HOSPITAL, NORTH CHINA.

A CASE OF SUBPERIOSTEAL LIPOMA OF THE FEMUR.

(By H. B. Kent, M.B., B.S.Lond., Medical Officer to the Kailan Mining Administration and to the Chinese Government Railways, North China.)

The following case is of pathological interest, and shows to what extent the philosophy of a Chinaman will permit him to put up with a considerable burden for several years. The patient, a man aged 41, walked into my out-patient room, and said he came to know whether he could have removed the swelling visible in the annexed illustration. It was fixed deeply into the tissues of the thigh, being attached by a deep root extending the whole length of the fascia lata. This root is well marked by the horizontal veins seen in the picture. In one part (which may be identified in the photograph by the white area) fluctuation undoubtedly existed, but elsewhere it was, in my opinion, solid. But this solidity was not very striking, for two other European medical men thought they obtained a doubtful thrill. The man's aspect did not suggest that the growth had had any serious effect on his general health.

History.

His history was that seven years ago a swelling appeared in the front of his thigh extending the whole length of the bone. This swelling had gradually increased in size until it reached its present dimensions. It was quite painless, and his health had been otherwise good. Five years ago a medical man attached to Indian troops (stationed here after the Boxer trouble in 1900) tapped the swelling, which was then comparatively small. The patient stated that only blood came out, so that even at this date the solidity of the tumour was questioned. Quite recently the tumour had been again tapped in Tientsin, with the same result. In view of these circumstances I advised the man to take the risk of an operation, and have the tumour removed.

Operation.

An incision was made over the summit of the swelling and gradually enlarged so that it extended the whole length of the tumour. Bleeding was fairly free from the large veins, but was easily controlled. The deep fascia was divided, and it was then plain that the tumour was deep in respect of the muscles of the thigh. It was interesting to note that the tumour had so displaced the extensor muscles that the patella was at right angles to the joint, the articular surface facing upwards and slightly forwards instead of horizontally backwards. The task of displacing the muscles to either side of the tumour was a tedious one, but was ultimately achieved with the actual division only of the sartorius muscles.

Unfortunately the patient, who had been anaesthetized with chloroform, showed signs that his heart was failing. His colour and pulse became very bad. Open ether was given by Dr. Cooper, and the patient rallied to some extent. The operation was continued as quickly as possible.

Having stripped off the muscles it was obvious that the tumour was an enormous lipoma, attached to the femur in four-fifths of its length. Its lower pole was free. The femoral vessels were displaced inwards and were much stretched. Starting from the lower pole the tumour was with difficulty freed from its fibrous attachments. This was a long operation, and the patient's condition became very grave. Cardiac stimulants and saline infusion were given during the last part of the operation. When the whole of the tumour had been removed it was found that the whole length of the femur was laid bare, being stripped of its periosteum.

The enormously stretched muscles were rolled up longitudinally, and a few stitches put in to hold them. The skin was brought together. It was thought that if the man rallied a secondary plastic operation could be done later.

The patient was exceedingly ill. His pulse was hardly perceptible and his colour very bad. Every method of cardiac stimulation was tried, but without much beneficial result. The unfortunate man died an hour and a half after getting back to bed.

Examination of the Tumour.

The tumour was found to be a lobulated lipoma. One portion (which had been tapped previously) had undergone degeneration, and there was some fluid in this part. Beyond this small portion the tumour was quite solid. The dimensions of the tumour were:

Circumference (around the tumour and thigh), 4ft.
Length from upper to lower pole, 2 ft. 9 in.
Weight after removal, 60 lb.

Remarks.

I see that Sir John Bland-Sutton, in his book *Tumours, Innocent and Malignant*, quotes two English cases of periosteal lipomas of the femur. Details are not given, but in civilized countries I doubt whether any one would allow a growth to become so large as that in the case now recorded before seeking surgical aid.

It was unfortunate that the patient died, but I think the cardiac muscle must have had for several years a severe strain put upon it. There were no bruits audible before operation. The bleeding at no time was excessive. We must conclude that the operation was greater than his cardiac muscle could stand. I do not believe the fact that we started with chloroform had any bearing on the ultimate result, *Post-mortem* examinations being illegal in China, no subsequent investigation as to condition of heart and other organs could be made.

In conclusion I must express my thanks to Dr. J. G. Gibb, M.D.Lond., F.R.C.S.Eng., of the Union Medical College, Peking, for his great assistance at the operation; and to Lieutenant Alexander Cooper, of the United States Army Medical Corps, for his help in giving the anaesthetic and supervising the saline infusion.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

SOUTH WALES AND MONMOUTHSHIRE BRANCH.

A clinical meeting of the Branch was held at the Newport and County Hospital on Thursday, February 6th, at 3 p.m. Mr. R. J. Coulter showed: (1) A case of marked unilateral proptosis with enlarged thyroid. (2) A specimen of sarcoma of the choroid, demonstrating the tumour very clearly. Mr. Greer showed: (1) A number of radiographs taken before and after operation for recent fractures of the tibia and fibula; the patients, who had been treated with plates and screws, were in attendance. (2) An ununited fracture of the tibia and fibula in an infant, which had been produced by a bone-setter's treatment of a bow-leg; the radiographs showed a bone graft taken from the child's rib in position and the absorption of the rib and development of callus. The patient was shown. (3) A series of thyroid glands removed by hemithyroidectomy, with photomicrographs exhibiting the histological structure found in Graves's disease and other pathological conditions. Dr. J. McGinn exhibited: (1) An apparatus for ionization, a number of patients treated, and photographs of the morbid conditions at various stages. (2) Keating-Hart's apparatus for use with a high frequency machine in fulguration. (3) Photographs and patients suffering from lupus erythematosus. The cases and exhibits were discussed and examined by the members present.

Reports of Societies.

MEDICAL SOCIETY OF LONDON.

Monday, February 24th, 1913.

Sir W. WATSON CHEYNE, President, in the Chair.

Unilateral Renal Lesions.

MR. RALPH THOMPSON read a communication based upon 13,505 autopsies, 8,218 on males, and 5,287 on females, at three London hospitals. All the autopsies were read through, no reliance being placed on indexes. The term "solitary kidney" was limited to cases where one kidney had either never developed, or had apparently undergone complete atrophy before birth. From the 13,500 *post-mortem* examinations he had collected 23 cases of solitary kidney, or 1 in 587 autopsies. Of the 23 cases, 14 were in males, 8 in females, and 1 in a case where the sex was not stated. Disease or mechanical lesion of the solitary kidney was only found in two cases. Some of the cases of supposed solitary kidney were really instances of double kidney. Dr. J. D. Rolleston recently stated that double ureter occurred in 1 per cent. of cases, but Mr. Dunn, Mr. Steward, and Mr. Rowlands stated that during an operation they had not come across a case of double ureter, Dr. H. M. Turnbull found this condition in only 1 in 150 of all autopsies recorded at the London Hospital; 8 were on the left side, 7 on the right. Mr. Thompson showed an instructive specimen exhibiting aberrant vessels, and then passed to the consideration of injuries to the kidneys. He had found records of injury to the left kidney in 19, and to the right kidney in 22. There were notes of only 3 cases in which both kidneys were injured. Of ascending inflammation of the kidney he brought forward 14 cases in which that occurred in the left kidney, 12 affecting the right. In 3 the side was not stated. The total number of bilateral ascending inflammations was 135, and of unilateral 38. The next aspect dealt with was hydronephrosis and growth, and he said that the incidence of unilateral hydronephrosis was as follows: The left side only was affected in 52 cases, the right side only in 44. The number of cases of unilateral hydronephrosis occurring with an unknown cause included a much larger number of males than females. Out of the cases of hydronephrosis associated with granular kidney 3 were bilateral, and 7 on the left side, but none on the right. A series of cases were related in which there was evidence of tuberculous peritonitis and abdominal lymphadenitis, leading to pressure on the ureters. Sufficient attention had not been paid to constriction of the ureters by fibrous bands formed as a result of tuberculous peritonitis. A man complained of right renal colic, and suffered from haematuria. Catheterization showed that the function of the right kidney was very imperfect, but that of the left was unimpaired. Mr. Thompson operated, and found the right kidney septic, and a fibrous band was stretched tightly over the ureter about 2 in. below the pelvis. The band was divided, and then a well-marked stenosis of the right ureter was discovered. The kidney was excised, but the patient died six weeks later from tuberculous meningitis. The excised kidney showed no signs of malignant peritonitis. With regard to renal calculus, Mr. G. W. King had collected for the author 100 clinical records of successive casses at Guy's Hospital, which showed 57 in which the calculus was on the right side, 41 on the left; 2 were bilateral. Mr. Thompson's own collection showed 27 left, 39 right, 14 bilateral. Adding those from London Hospital gave 210 cases, of which 81 were left, 102 right, 22 bilateral; 5 not stated. Among 19 cases in children there were 11 right and 8 left. In the *Lancet*, early last year, an authority stated that *post-mortem* records taught that surgeons should be careful about undertaking nephrectomy for tuberculous disease, as the other kidney was frequently affected. Mr. Thompson's researches at three hospitals, however, revealed the following facts: (1) The unilateral cases of *post-mortem* renal tuberculosis were as 37 to 74 bilateral. (2) In the unilateral cases the right was affected in the proportion of 13 to 5 on the left. Pyelonephritis and bacilluria were admittedly more common on the right than on the left side. In regard to the reason why the right kidney should be more often affected than the left by inflammatory conditions, there seemed to be anatomical evidence that blood infection was more likely to reach the right kidney. That infection could reach the kidney from the alimentary canal was proved by reference to certain cases of carcinoma. The points upon which the author invited discussion were: (1) That the incidence of solitary kidney was much nearer the higher percentages recorded by some observers than the lower figures by others. (2) That the incidence of double ureters was more frequent than textbooks on surgery indicated. (3) That ascending inflammation might affect only one kidney in about 20 per cent. of all cases, and was more common on the left side, owing to pelvic causes. (4) That hydronephrosis was frequently unilateral, and was more common on the left side, chiefly owing to pelvic trouble. (5) That infarcts and miliary tubercles represented blood infection, and bacilluria represented lymphatic infection. Local tuberculosis and renal calculus, as well as infarcts, miliary tubercle, and bacilluria, were more common on the right side. The explanation was apparently to be found in the anatomical conditions, namely: (1) The arrangement of the blood vessels; (2) the anatomy of the colon; (3) the normal anatomical obstruction which might be present to the flow of urine along the ureter, before it reached the limits of the bony pelvis.

MR. THOMSON WALKER considered that Mr. Ralph Thompson had given the society some very interesting and important facts concerning diseases of the kidney. Unilateral renal disease lay at the root of the treatment of a large number of diseases of the kidney. Renal tuberculosis, carcinoma of the kidney, advanced cases of stone, pyelonephrosis, and some other diseases, all called for nephrectomy, and that operation could not be undertaken as a curative measure unless the disease were unilateral. There was a pathological and a clinical aspect. Mr. Thompson had shed a much more cheerful light on the former than pathologists were accustomed to impart. The pathologist had the advantage of being able to study and report on the specimen at leisure, but he also laboured under the grave disadvantage that he looked at the disease—and that was especially so in the case of a vital organ like the kidney—from the point of view only of its final stage. Mr. Walker proposed to confine his remarks practically to tuberculosis. On that question the view of the pathologist was very pessimistic, as far as unilateral and bilateral distribution was concerned. Professor Adami said it was usual at autopsies to find both kidneys affected, but the disease was more advanced in one than in the other. But the surgeon was, said Mr. Thomson Walker, more concerned with the *ante-mortem* pathology, the prime fact of which was that it was the early stage which was the surgically important one. Mr. Thompson's *post-mortem* statistics had confirmed those of several Continental observers. But, however important and pessimistic might be the *post-mortem* figures, they could not get over the mass of clinical and surgical evidence which had now accumulated that renal tuberculosis was, in its early stage, a unilateral disease. Miliary tuberculosis did not loom surgically into the field; it was too generalized. Having recognized the disease early, then by performing nephrectomy in the early (unilateral) stage one could cure renal tuberculosis in the large majority of cases. Israel found, clinically, that unilateral cases numbered 88 per cent., Krönlein, 92 per cent. In the clinical diagnosis of renal tuberculosis very little help was derived by the ordinary physical diagnosis. Pain, for instance, might be entirely absent during the whole course of the disease; or there might be pain in one kidney only, and it was still a problem whether the fellow kidney was healthy. It might be that one kidney had been destroyed by tuberculosis without pain, and that the second had become infected and was painful. The same might be true of tenderness and enlargement of the organ. One kidney might have been destroyed by tuberculosis without having been enlarged or tender, or palpable; but when the second became involved it might be both large and tender. Mr. Walker referred to an instance where a patient's enlarged and tender kidney, unlike its fellow, still functioned; thus, its removal would have resulted in fatal uraemia. This type of complication explained many cases where anuria came on after operation for renal tuberculosis in the statistics of the older surgeons. The use of the ureteric catheter for diagnosis was dwelt upon, and sources of fallacy indicated by Mr. Walker. When

the bladder was much involved tuberculin should be given, then the vesical complication underwent improvement until at length catheterization could be carried out for the determination of the diseased kidney. In many cases that failed, and then the question of opening the bladder and catheterizing the ureters arose. That was not easy, as the bladder was extensively ulcerated and contracted, and bled very readily. Another suggestion was to put a temporary ligature on it and collect the urine from the other side, but that did not appeal to him, and he had had no experience of it. Should not one, in such a case, open the supposed healthy kidney and find whether it was tuberculous? That had been his practice in most cases of that kind. He believed that in most cases tuberculosis of the kidney commenced at the apices of the pyramids, and passed outwards to produce the cavernous type. Tubercle bacilli were sure to be in the urine, therefore he relied upon the ureteric catheter. An objection to nephrotomy was that it involved destruction of some part of the kidney—a very important matter, seeing that it would probably be the patient's only working kidney. Unilateral urinary tuberculosis was usually secondary to a lesion elsewhere, such as in the spine or in a joint; therefore if one kidney were removed by operation, what proof was there that the primary focus elsewhere would not destroy the other kidney? That could only be answered by a study of the effect of nephrectomy in those cases; but the second kidney, when it was involved, seemed in most instances to have been infected from the first, not from the distant disease area. Israel collected 1,023 records of nephrectomy for unilateral tuberculosis, with a "near mortality" (that is, up to six months) of 12.9 per cent., and a late mortality (after six months) of 10.15 per cent.; in other words, 75 per cent. of cases were looked upon as cured. Pulmonary tuberculosis accounted for 45 per cent. of the late deaths.

Urinary Secretion of Potassium Iodide.

Dr. O. KAUFFMANN read a contribution entitled, Some experiments on the urinary excretion of potassium iodide and their clinical significance. He sought to test whether, by means of the time required by the kidneys to excrete a fixed dose of potassium iodide, a measure could be found of renal efficiency in certain directions in which neither the volume and degree of concentration of the urine nor the quantity of urea formed a reliable measure. In persons whose general state was satisfactory—with no renal disease, endocarditis, or cardiac failure—iodine was found in the urine an hour and a half after the administration, and the excretion usually ceased nine to twelve hours after the giving of the dose. Subjects with Bright's disease, cardiac failure, or arterial degeneration showed a delay until the third hour, and ceased sooner than in the case of the healthy. In health or when lying in bed, whether on a pure milk diet or a mixed diet, 10 to 20 mg. of iodine appeared in the urine. In the same person the quantity of iodine excreted did not necessarily vary with the quantity of urea passed in the same time, nor with the amount of urinary water. Pyrexia was associated with a diminished excretion of iodine. The administration of iron was followed by a decrease of urinary iodine, but the exhibition of potassium citrate had the contrary effect. The power of the kidneys to excrete potassium iodide was a measure of one kind of renal efficiency which could not be gauged by either the quantity of water or the quantity of urea passed, and for which the chlorides, seeing that their mass depended essentially upon food ingestion, could not be used as a measure. In interstitial nephritis Dr. Kauffmann regarded the potassium iodide efficiency as a valuable diagnostic aid.

ROYAL SOCIETY OF MEDICINE.

CLINICAL SECTION.

Friday, February 14th, 1913.

Sir WILLIAM OSLER, President, in the Chair.

Discussion on Cervical Rib.

Dr. F. WOOD JONES opened a discussion on cervical rib from the anatomical point of view. There was an antagonism between the development of a limb plexus and the development of ribs extending over that area from which the limb had originated. A limb bud might arise nearer to the head or nearer to the tail than normally, and its limb plexus might be of the pre-fixed or post-fixed type. With either variation costal anomalies might result. Both might proceed so far that the plexus readjusted itself with the development of the seventh cervical rib or abortion of the first thoracic rib, as the case might be; or there might be disharmony between nerve movement and rib development and brachial neuritis might be caused by abnormal pressure. This antagonism also accounted for the vascular symptoms, for the sympathetic vascular nerves ran for the most part in the lowest cord of the brachial plexus, and symptoms might be produced by cervical ribs or by first thoracic ribs, depending on the constitution of that plexus. By radiography a definite diagnosis as to the nature of the offending costal element could be made only by a count of the vertebra elements lying cephalic to the costal process. Mr. W. THORBURN said he analysed the results of twenty surgical operations which he had performed. There were no serious difficulties. A transient paralysis of the brachial plexus and suprascapular nerve were met with in three cases, and the pleura was twice wounded without after ill-effects. He had removed the first dorsal rib in error, but with perfect functional result. All the cases had improved, and complete cures were obtained in more than one half. He preferred a long vertical incision at the back of the posterior triangle of the neck with dissection forward. Mr. PERCY SARGENT had operated upon 29 cases, 26 of whom were female. Asepsis and gentleness of manipulation were essential, but it was not always necessary to remove the rib, division of the continuing band being often sufficient. In only one case was pain unrelieved. Dr. S. A. K. WILSON laid stress on the dissociation of the muscles of the hand with regard to their wasting, particularly as a means of distinguishing the condition from progressive muscular atrophy. He showed several photographs to illustrate the point. Dr. FARQUHAR BUZZARD spoke of a similar dissociation of wasting. The pain might be of any degree or distribution. He had met with many instances of acroparaesthesia. The question of occupation was important, and several had obtained relief by giving up some particular form of work. He doubted whether there were any characteristic sensory symptoms in "cervical rib." Twelve cases were shown, all in women. Of these, 10 had been operated upon, 9 with good effect; in one case the result had been unsatisfactory. Of the remaining two, one had improved without operation, and the other remained *in statu quo ante*.

SECTION OF LARYNGOLOGY.

Friday, February 7th, 1913.

Mr. T. MARK HOVELL, Vice-President, in the Chair.

Exhibition of Cases.

MR. C. W. M. HOPE exhibited two cases of *Malignant disease of the larynx* treated by injections of seleniol, an electrolytic colloid of selenium. A man, aged 25, had mixed cell sarcoma of the tonsil and deep glands removed at separate operations; in spite of the infiltrating character of the secondary growth seleniol had given local and general improvement. The second patient, a man aged 53, had extensive fungating growth of the larynx, causing obstruction, and a secondary growth; 3 c.cm. of seleniol had been injected three times a week into the tissues, close to the thyroid cartilage. General improvement followed; the fungating growth gave place to a clean ulcer, and the dyspnoea was relieved. Mr. DE SANTI doubted the efficacy of seleniol, but considered that operation offered the only hope. He would have advised clearing out the glands of the neck at the first operation, or shortly after; in 8 similar cases of his own recurrence had followed in three to six months. Mr. BETHAM ROBINSON pointed out that lympho-sarcomata, and some other sarcomata of the tonsil did well after operation, but the class of growth with much infiltration and little definition was hopeless. Dr. ADOLPH BRONNER asked if antimeristine had been used by any member. Dr. DOUGLAS HARMER had employed antimeristine in a case of extrinsic carcinoma of the larynx, with material obtained by Dr. Schmidt in the method prescribed. After each of the ten doses the temperature was raised, the tumour increased, and

ultimately fungated. Dr. KELSON showed a case of *Pedunculated tumour attached to the inferior turbinal* of a man aged 72. Dr. P. HEMINGTON PEGLER believed it to be an instance of mucous hypertrophy. Mr. T. B. LAYTON exhibited a case of *Syphilitic stenosis of the larynx* with calcification of the fascia of the neck, previously shown by Mr. Charters Symonds and Mr. F. J. Steward in 1899. The palate was extensively scarred, and evidence of interstitial keratitis and choroiditis had appeared in the interval. There was some dyspnoea. Wassermann's reaction was positive. Mr. BETHAM ROBINSON had proposed tracheotomy. The extreme hardness round the hyoid bone was much the same as when the case was first shown, but the larynx was freer. Dr. W. HILL doubted, as on the previous occasion, the appropriateness of the word "calcification"; he considered "keloidal" as more suitable. Mr. HAROLD BARWELL indicated that an *x*-ray examination would clear up this point. Dr. H. J. DAVIS compared the hardness with Dupuytren's cicatricial contraction. Mr. J. F. O'MALLEY exhibited a case of *Webbing of the vocal cords* in the anterior commissure due to a shot wound, in a boy aged 11. The pellets of an "Eley 14" cartridge had ricochetted from a wall. The *x*-ray plate showed four pellets on the right side and one on the left. The damage was done by the one shot. Posterior to the webbing the cords moved well; the voice was hoarse. Mr. H. BARWELL recommended that nothing should be done, as the breathing space was sufficient. Mr. E. B. WAGGETT advised laryngotomy. In a case of webbed cords under Dr. WILLIAM HILL the voice was recovered after operation. Dr. FITZGERALD POWELL suggested waiting till the boy's voice changed. Dr. H. J. DAVIS would prefer laryngoscopy treatment and subsequent dilatation; he feared the voice might become worse after an operation. Dr. W. MILLIGAN preferred immediate operation, for two or three years' postponement would result in atrophy of the muscles. Dr. LAMBERT LACK considered that operation on the larynx of the child usually ended in failure. Operation might lead to stricture as well as loss of voice. He would defer operation till the boy had grown up. The CHAIRMAN was in favour of postponing interference. Dr. J. DONELAN'S case of *Adhesion of the uvula to the posterior pharyngeal wall* gave rise to some discussion. Dr. DAN MCKENZIE had seen a good result after Dr. Dundas Grant had removed part of the bony palate and attached stitches passed through the soft palate to the incisor teeth; he had also experience of the method of passing rubber tubes through the nares and out through the mouth; the projecting tubes were tied together. Mr. DE SANTI related how Mr. W. G. Spencer detached the adhesion with the scissors and raspatory. The soft parts were then rolled together and transfixed with a silver wire suture, which was passed through the muco-periosteum of the hard palate. Recontraction was very apt to follow. Mr. BETHAM ROBINSON had passed a lead plate round the separated palate. Silks passed through the plate were led out through the nostrils and mouth and tied together; the result was good. Dr. MILLIGAN did not consider any method gave really good results. Dr. FITZGERALD POWELL recommended the rubber tube method; the tube should be cleaned and replaced for a month. The CHAIRMAN had stitched preputial mucosa to the raw surface, and the case, six years later, had a good voice and excellent nasal breathing. Dr. DONELAN exhibited a new tonsillotome which could be used as a tonsillectome. Dr. WATSON WILLIAMS demonstrated an instrument in which the power was applied by the grip. Dr. H. J. DAVIS brought Sluder's own tonsil guillotines, and showed how Sluder employed them. Dr. WILLIAM HILL referred to the improvements Mr. J. F. O'Malley had made in Ballenger's instrument; personally he was impressed with the effectiveness of the reinforced Mackenzie. Dr. DAN MCKENZIE had seen severe cicatrices after the use of the blunt tonsillectome; he preferred a sharp Mackenzie guillotine. Dr. W. MILLIGAN thought the Sluder operation too forcible; he had seen the mucous membrane dissected off and the snare applied with great skill and finish. Mr. E. B. WAGGETT also approved of the snare. Dr. DUNDAS GRANT mentioned that a rectangular knife with a blunt point was useful in dissecting out the upper pole of the tonsil; this pole was readily enucleated by the guillotine. Dr. W. H. KELSON considered many tonsils were easily detachable; the present requirement was a suitable method of dealing with the more difficult cases. The CHAIRMAN pinned his faith to the Mackenzie guillotine. With reference to Dr. H. J. Davis's case of cyst of the upper jaw, Mr. BETHAM ROBINSON had found elasticity on pressing the palate, and from the irregularity of the teeth deduced a dentigerous cyst. The antrum was probably small and unaffected. Dr. H. J. DAVIS reported that this side of the face was dark on transillumination; the cyst had increased in size; a similar case had developed osteo-myelitis after an out-patient operation. Mr. T. JEFFERSON FAULDER exhibited a man, aged 24, with a *Bony enlargement of the left side of the face* for three years; epiphora had been present during that time. Mr. BETHAM ROBINSON considered the condition as chronic osteitis of the character of leontiasis ossea; he advised potassium iodide. Dr. DONELAN regarded the condition as inflammatory, following rhinitis; he recommended operation. Mr. DE SANTI agreed with Mr. Betham Robinson's view, and was against operation. Dr. HEMINGTON PEGLER said the bilateral character pointed to a mild form of leontiasis. Dr. DAN MCKENZIE suggested the opening of the nasal duct into the nose above the inferior turbinal; he would show a case in which this had been done. Dr. E. A. PETERS showed a case of *Chronic pemphigus* in a man aged 49. It began after a small operation on polypi; small vesicles first appeared on the pharynx and palate, and eventually large vesicles developed on the face, wrists, and lips. A bacteriological examination showed a few contaminating staphylococci. Arsenic, rest, and small doses of opium were acting well. Dr. R. E. SCHOLEFIELD related a case with similar symptoms where iodide of potassium and antipyrin had been taken previously. Dr. H. J. DAVIS had found orthoform of great service. Mr. DOUGLAS HARMER exhibited specimens illustrating a case of *Suppuration of the antrum due to Aspergillus fumigatus*. The patient, a lady, had suffered for years from hay fever, and caught a severe cold when motoring. A persistent one-sided discharge followed, with a "wet blotting-paper" cast on the pharyngeal wall. The right antrum was dull and the right nasal mucous membrane extremely swollen. The antrum was opened intra-nasally and irrigated twice a day, when membrane and gritty fragments came away with difficulty. Various applications were made, but finally sodium iodide internally and local applications of five-volume hydrogen peroxide were effective. The antrum became suddenly clear. Only three cases were mentioned in literature. The fungus was common in chronic lung cavities and the ear. Dr. H. J. DAVIS mentioned a case where the antrum was filled with polypi and small yellow bodies which exhibited a mycelium. Dr. ADOLPH BRONNER had found the fungus in cases which resembled chronic eczema of the external auditory meatus. Dr. DOUGLAS HARMER exhibited two specimens of the brine shrimp (*Artemia salina*) which had been recovered from the nose, where they caused a sensation of movement and intense irritation. The patient had been using a saline lotion prepared from patent sea salt. Dr. S. F. HARMER reported that *Artemia salina* lived in basins of concentrated sea water. The eggs present in sea-salt hatched out under favourable conditions; probably in this instance they had developed in an old solution which had been left unused. Dr. HAROLD BARWELL exhibited a boy, aged 13, with extensive *Ulceration* of pharynx, larynx, and naso-pharynx. Wassermann's reaction was positive, and so determined the nature of the ulceration. Dr. H. J. DAVIS showed (1) case of *Rodent ulcer* opening into the nose; (2) a *Suppurating dental cyst*; (3) *Lupus of the tongue, face, anterior nares, and palate*. Dr. E. A. PETERS remarked on the three clinical forms of lupus present as determined by the character of the local tissue, namely, (*a*) hypertrophic growth on the moist palate; (*b*) dry or atrophic in the dry anterior nares; (*c*) warty lupus on the friction surface of the tongue.

SECTION OF OBSTETRICS AND GYNAECOLOGY.

Thursday, February 6th, 1913.

Dr. AMAND ROUTH, President, in the Chair.

Red Degeneration of Uterine Fibromyomata.

A COMMUNICATION on this subject was read by Professor LORRAIN SMITH (Edinburgh) and Dr. FLETCHER SHAW (Manchester). The authors based their conclusions upon

the examination of 24 specimens, all characterized by their red colour; in other respects there were differences, and they therefore divided them into two groups, one in which thrombosis was the principal change (thrombotic group), and another in which there was no thrombosis, but a marked increase in blood vessels so numerous as to warrant this non-thrombotic group being regarded as angiomatous degeneration. The thrombotic group contained 15 out of the 24 specimens described; they were all associated with definite clinical symptoms, they were coloured a deep red, and showed no free blood on their cut surface. In a few specimens all the vessels appeared to be filled with thrombi, but in the majority only a portion of the vessels were thrombosed. Most of the specimens showed the red coloration throughout; in some it was partial, and in a few it was limited to the neighbourhood of the thrombosed vessels. The clinical symptoms included abdominal pain and tenderness of the tumour, rapid increase in size, fever and quick pulse. Micro-organisms were only found in a few cases, in all of which clinical symptoms of some severity were present. All the tumours were found to contain fat in the tissues, and, following Leith Murray, the authors believed the red coloration to be due to the haemolytic action of lipoid bodies. Of the 15 specimens in this group 6 were clinically associated with pregnancy or the puerperium. The non-thrombotic group (angiomatous degeneration) included 9 specimens. These tumours were of a bright red colour and showed free blood on their cut surface. All showed the presence of large numbers of thin-walled vessels of microscopic size filled with blood, the red colour being due to the presence of these vessels. In only one specimen was much fat found, and this was of a dark red colour, as in the thrombotic group. None of the patients showed definite clinical symptoms other than haemorrhage and pressure.

The Cause of Internal Rotation of the Fetal Head.

Dr. James Young (Edinburgh) read a paper on internal rotation, and illustrated it by models and by an epidiascope demonstration. The author formulated the view that a firm cylindrical body, closely fitting a curved cylindrical canal, when forced along that canal continually changes its position; the lower end, in contact with the posterior wall of the canal, is carried continually forward as the body descends. The application of this view to the descent of the head in occipito-anterior and occipito-posterior positions was discussed and illustrated by the original models constructed by the author.

Section of Otology.

Friday, February 21st, 1913.

Dr. Dundas Grant, President, in the Chair.

The Temporal Bones.

Mr. Arthur Cheatle gave a detailed description of both temporal bones from 120 persons, showing that in 82 there was symmetry and in 38 asymmetry. The diploëtic or infantile type was present in 44, on both sides in 24, and one side in 20.

Otitic Abscess of Pterygoid Region.

Dr. Dan McKenzie showed and described a case where an abscess of this type was drained through the external auditory meatus, the patient recovering. The abscesses followed suppurative labyrinthitis with facial paralysis, developing in the course of suppuration of the middle ear of eighteen years' duration, attributed to scarlet fever. The discharge had increased during the last two weeks, and facial paralysis suddenly occurred five days before admission; there had never been any vertigo, nausea, or vomiting. Dr. McKenzie performed the radical mastoid operation and labyrinthotomy. The bone disease was found chiefly in the region of the Fallopian aqueduct. A fistula had developed in connexion with the external semicircular canal, and was enlarged; inferior vestibulotomy was performed through the wall of the promontory. The patient, however, did not make good progress; pain was complained of in the ear and the corresponding side of the head, and the discharge did not cease. Lumbar puncture was performed later on, 20 c.cm. of clear fluid being drawn off. The headache then subsided. Marked oedema of the left side of the face, chiefly of the temple and zygomatic region, left cheek, and orbit, developed. The patient could not masticate his food on account of the pain caused by movements of the lower jaw, which was found to be fixed in a half-open position. All attempts to open the mouth wider or to close it caused much suffering. Dr. McKenzie therefore opened up again and evacuated a pterygoid abscess. Intermittent fever continued for a week after the operation, then the temperature fell to normal. Facial paralysis, however, remained. As a complication of purulent otitis, otitic pterygoid abscess was rare, as only fifteen instances had been recorded.

Deafness after Epidemic Cerebro-spinal Meningitis.

Dr. H. J. Davis showed this case; the patient was a boy, aged 6, and the deafness was progressive and bilateral. The child was in danger of becoming a deaf-mute, and Dr. Davis commented on the more systematic and adequate way in which these cases were taken in hand and educated in America and on the Continent as compared with this country.

Edinburgh Obstetrical Society.

Wednesday, February 12th, 1913.

Dr. Haig Ferguson, President, in the Chair.

Uterine Haemorrhage of Ovarian Origin.

Dr. James Young described two cases of this type. The first patient was 40 years old, and a 7-para. Menstruation had always been copious, but was regular till the last three years. During that space of time it appeared fortnightly, frequently lasting ten days, and it was associated with ovarian pain. Curettage revealed glandular endometritis, but proved of no benefit. Ultimately supra-vaginal hysterectomy was performed, and the right ovary was removed. The endometrium showed glandular hyperplasia, as before. The ovary contained a corpus luteum with a large blood space. The luteal cells were ploughed up by haemorrhage, and the surrounding ovarian stroma was oedematous and haemorrhagic. The second patient was 28 years old, a unipara. Menstruation had been regular till May, 1912, when it lasted three weeks and was attended with severe abdominal pain. A pelvic tumour developed and was removed; it was then found to be an enlarged ovary containing a luteal haematoma. Microscopically it showed similarity to the other case. The haemorrhage corresponded to a prolonged period and was associated with excessive bleeding in the ovary, the region where the menstruation-producing substance was elaborated. Hence the haemorrhage must have been due to an excessive ovarian activity, probably frequent as a cause of menorrhagia and metrorrhagia where there was no definite uterine tumour, etc. The glandular endometritis found in these cases on curettage corresponded to an excess of the glandular hyperplasia present in the menstrual mucosa.

Eclampsia with Symmetrical Necrosis of Renal Cortex and Suppression of Urine.

Professor Robert Jardine and Dr. A. M. Kennedy (Glasgow) described three cases clinically suggesting eclampsia, in which similar pathological changes involved the kidneys. In the first a 9-gravida aged 34 had concealed accidental haemorrhage in the seventh month of pregnancy. There was absolute anuria for four and a half days. The patient was delivered three hours after admission and died four days later. There were no fits. The second patient was a 2-gravida aged 38, who was delivered of twins the day after admission. The urine, on admission, was loaded with albumen. There was anuria for two and a half days ending in death, preceded by one convulsion. The third patient was a 1-gravida aged 23, four and a half months pregnant, admitted comatose after several fits. The urine was loaded with albumen, and she died after one and a half to two days' suppression. Dr. Kennedy found in all these cases symmetrical necrosis of the kidney cortex, more or less limited to the outer two-thirds and varying in degree with the duration of the suppression. In the two older cases the necrosis was more or less uniform and was separated from the living inner third by a haemorrhagic zone. The cortical vessels were thrombosed in the necrotic zone only. In the earliest case the necrosis was in patches, which were surrounded by intense congestion. There was little thrombosis, and it was limited to the capillaries.

The questions arose, Was the thrombosis primary and the cell degeneration secondary, or was this latter change primary? or, finally, were both due to the same cause? Dr. Kennedy believed that the kidney necrosis was similar to the focal liver necrosis present in eclampsia, and that it was the primary factor. Professor Teacher had previously described two similar cases with Professor Jardine, and believed, on the other hand, that the condition was due to spasm of the smaller renal arteries. This explanation was based upon the presence of Raynaud's disease in the one instance, upon the symmetrical nature of the necrosis, and upon the thrombosis being frequently in the arteries just beyond the arterial arches. In the five cases, however, Raynaud's condition was present in one only, and the symmetrical necrosis was quite consistent with a general toxaemia. From this, and the starting of the thrombosis in the capillaries in the earliest case, the authors believed that the necrosis was primary. In the liver also it might be present without thrombosis. The authors, in conclusion, ascribed the necrotic change to the eclamptic toxin, whatever this might be.

LIVERPOOL MEDICAL INSTITUTION.

Thursday, February 13th, 1913.

Mr. R. W. MURRAY in the Chair.

THE fifth pathological meeting of the session was devoted to the consideration of tuberculous disease.

Specimens.

The following specimens were shown and described:—Mr. NEWBOLT and Dr. S. W. MCLELLAN: (1) Tuberculous sac of hernia. (2) Tuberculous mastitis. Mr. ARMOUR and Dr. S. W. MCLELLAN: Alveolar sarcoma of Billroth, tumour of the face. Mr. THELWALL THOMAS and Dr. REES: (1) Tuberculous breast. (2) Tuberculous synovitis. Mr. MONSARRAT: Tuberculous adenitis of the mesentery. Dr. NATHAN RAW: (1) Healed tuberculosis of apex, with thickened pleura. (2) Tuberculosis of the appendix. (3) Tuberculosis in a fish. (4) Pure cultures of human, bovine, and avian bacilli. (5) Suprarenal glands and kidneys showing tuberculous infection. (6) Uteri and Fallopian tubes with acute tuberculous disease. Mr. F. JEANS and Mr. THURSTAN HOLLAND: Large calcified tuberculous gland from omentum. Dr. STOPFORD TAYLOR and Dr. R. W. MACKENNA; Wax casts of tuberculous affections of the skin. Professor ERNEST GLYNN: Tuberculosis in a fish. Dr. BUSHBY showed a card specimen. Dr. BLAIR BELL: Tuberculous salpingitis (two cases). Dr. BARENDT, Mr. MONSARRAT, Mr. THURSTAN HOLLAND, and Professor ERNEST GLYNN discussed the specimens.

Pathology and Bacteriology of Tuberculosis.

Dr. NATHAN RAW, in a paper on this subject, discussed the variations in type of the tubercle bacillus and their cultural appearances. The methods of entry of the organism and the manner of extension were next described. Dr. Raw quoted the work of Dr. J. Fraser in support of his own view, that bone and joint tuberculous affections in children were due to the bovine bacillus. The effect of vaccination on the cow was mentioned; it had been shown that the animal might have large quantities of the tubercle bacillus in the milk for long afterwards. Mr. JEANS thought that the virulence of the bacilli varied in different districts. Dr. LOGAN discussed the frequency of tuberculosis in children and in people late in life. He thought the disease was frequently mistaken for chronic bronchitis in the old. Mr. ADAIR DIGHTON thought that infection of the tonsils and cervical glands was caused by infection from the sputum. Professor ERNEST GLYNN was surprised at Dr. Raw's opinion that acute miliary tuberculosis, tuberculosis of lymph glands (other than mesenteric), of bones and joints and of the meninges was usually caused by bacilli of bovine type. This opinion was diametrically opposed to the published observations of the Royal Commission and to the still larger number of observations by other investigators, collected by Park and Krumweide. Professor Ernest Glynn asked Dr. Raw to state the reasons and to detail the experiments which made him advance such an opinion. Dr. Raw placed all cases of pulmonary tuberculosis, with or without secondary enteritis and laryngitis, in a "human ward" for treatment with bovine tuberculin, and all other cases in a "bovine ward" for treatment with human tuberculin. If the figures of the Royal Commission or Park and Krumweide were to be relied upon, by far the larger proportion of Dr. Raw's cases were in the wrong ward. Dr. MURRAY BLIGH asked if Dr. Nathan Raw would state if he could distinguish the two kinds of bacilli microscopically. Dr. CRACE-CALVERT also spoke. In his reply, Dr. NATHAN RAW said he had arrived at his conclusions by clinical observation. But he said his experimental work had shown that the lesions specified in children were of the bovine type, and were caused through milk. In answer to Dr. Bligh, Dr. Raw stated that he knew of no certain means of distinguishing between the two organisms microscopically.

MANCHESTER MEDICAL SOCIETY.

Wednesdays, February 5th and 19th, 1913.

Dr. J. J. Cox in the Chair.

Treatment of Syphilis by Neo-salvarsan with Wassermann Control.

MR. SAVATARD said that since Mr. McDonagh's paper on "A Rational Method of Treating Syphilis" was read last July he had treated some 25 cases and given about 100 injections with excellent results. In 5 cases he had administered the drug intramuscularly, but all the patients had suffered pain afterwards. The remainder had all been treated intravenously. The greatest care had been taken in the preparation of the patient and of the apparatus. McDonagh's syringe was used. The neo-salvarsan was dissolved in freshly redistilled water (heated to 100° C. and then cooled to 25° C). The dosage varied from 0.6 gram to 0.9 gram. All the cases thus treated had, apart from their syphilitic affection, been otherwise healthy. No bad symptoms had resulted and in no instance had there been any rise of temperature. The injections had been given in some cases weekly, in others fortnightly, and in others every three weeks. When a cure was aimed at, the injections were continued till the Wassermann reaction was negative both before and after the last injection. To produce this result in "secondary" cases at least seven injections had been found necessary. Mercury had been administered afterwards. The earlier the treatment the sooner was the cure effected. Among the "secondary" cases previously untreated were macular, papular, pustular and framboesiform syphilides. A case of syphilitic leucoderma in a man was also mentioned in which a single injection had effected a symptomatic cure. The "tertiary" cases shown had previously resisted prolonged treatment with mercury and potassium iodide, and among these were patients with extensive lesions of the buccal cavity and a malignant syphilide. The speaker commended the use of the provocative injection in cases of latent syphilis.

Dr. ARNOLD RENSHAW dealt with the pathological aspect of the question. The evolution of the Wassermann reaction was traced from the time when Pfeiffer demonstrated the phenomenon of bacteriolysis. Discussing the nature of the "antibodies" which cause a positive reaction, the speaker considered that they could not be true antibodies, similar, say, to those present in streptococcal infections, since, so far as he knew, no spirochaetes had been demonstrated as being ingested by leucocytes. Subsequently he had maintained that a positive Wassermann reaction was an expression of the amount of liberated endotoxin obtained by the destruction of spirochaetes and its subsequent action upon the cells. Whether that reaction was due to the actual disorganization of the cells, brought about in some special chemical manner (possibly a catalytic reaction) by the particular endotoxin set free by the dead spirochaetes, had yet to be determined. Dr. Renshaw then discussed McDonagh's review of the life-cycle of the organism of syphilis, and observed in conclusion that stomatitis cases usually gave a very strongly positive reaction; and, where a mouth lesion of any magnitude was present with only a slightly positive reaction, it should be suspected that the disease had had some other infective process—for example, tuberculosis—superadded, or that the condition had progressed to the stage of carcinoma.

X Rays in Pulmonary Tuberculosis.

In a memoir on the early diagnosis of pulmonary tuberculosis in young children, with especial reference to the value of *x* rays, Dr. LAPAGE drew attention to the

frequency of pulmonary tuberculosis in children, and to the evidence which showed that the disease was so often at the roots of the lungs. He described the conditions which gave most difficulty in diagnosis: (1) Active open disease at the roots; (2) active disease limited to the bronchial glands; (3) healed disease in the lungs, with some superadded condition, causing general symptoms resembling those of tuberculosis. Having noted the fact that with ordinary clinical methods it was often impossible to make a definite diagnosis, owing to the absence of physical signs, the value of the *x* rays in clinching a diagnosis based on suspicious symptoms only was demonstrated. The results of the examination of 150 cases, mostly chosen for suspicious clinical conditions, was given in tabular form. The table showed the relation between the clinical and the *x*-ray examination as made independently by clinician and radiographer. Dr. Lapage upheld the great value of the *x* rays in these early cases as a supplement to the clinical examination, and pointed out the importance of establishing the normal screen picture of the thorax.

Dr. W. J. S. BYTHELL first dealt with the nature of the evidence afforded by an *x*-ray examination, directing attention specially to the importance of thoroughly examining the appearance of the roots of the lungs. In his opinion the normal streaky markings visible in all lungs might be increased by bronchitis, and he regarded shadows due to enlargement of the bronchial glands or to pulmonary consolidation as the only reliable signs of tuberculous infection. As the result of the 300 or 400 examinations he had made he concluded that the majority of children living in large towns present evidences of this tuberculous infection after the age of 6 to 8 years. In most cases the glands were able to overcome the bacilli, but should they caseate and break down the infection extended directly to the adjacent lung tissue and led to a tuberculous broncho-pneumonia, originating at the hilus of the lung. In any case, he was strongly of opinion that pulmonary tuberculosis in children commenced in the vast majority of cases, if not invariably, at the root of the lung. In the earliest stages of this root disease definite indication of the lesion might often be discovered by means of the rays when there were no physical signs to be detected.

GLASGOW OBSTETRICAL AND GYNAECOLOGICAL SOCIETY.

A MEETING of this society was held on January 29th, the President, Dr. LINDSAY, in the chair. The following specimens were exhibited:—Dr. BALFOUR MARSHALL: (1) *Intramural uterine fibroid;* (2) *Uterus with fibroids*, the tumours had burrowed into both broad ligaments; (3) *Fibroid from left broad ligament;* (4) *Ovarian cystoma;* (5) *Fibroid with double salpingo-oöphoritis;* (6) *Bilateral salpingo-oöphoritis;* (7) *Parovarian cyst* with torsion of pedicle. Dr. MUNRO KERR: (1) Specimen of *Extrauterine pregnancy*, showing process of tubal abortion; (2) *Bilateral malignant ovarian tumour;* (3) *Adenocarcinoma of uterus.* Dr. A. W. RUSSELL: (1) *Multilocular ovarian cyst of left ovary*—the right ovary had been removed for a similar condition eight months previously; (2) *Oedematous fibroma of ovary*—the tumour had been present two years without pain. Dr. W. D. MACFARLANE: (1) *Melanotic carcinoma of vulva*—excision of growth and glands had been carried out; (2) *Double ovarian dermoids* (Dr. Ritchie's case); (3) *Multiple fibroids in pregnant uterus.* Dr. SHANNON: (1) *Ovarian cyst;* (2) *Cancer of right ovary*, with peritonitis. Dr. MCILROY: A *Bilobed placenta* with velamentous attachment of cord and area of infarction. Dr. BALFOUR MARSHALL recorded a case of *Maldevelopment* showing a dystopic (pelvic) left kidney, absence of vagina, and presence of Müller's ducts, the right in part represented by a cornuate small uterus. Both ovaries and a right Fallopian tube were present. The menstrual molimen had not been experienced, and the patient sought medical advice on account of amenorrhoea and a swelling in the pelvis. The tumour, exposed by incision, lay in the left side of the pelvis; the left iliac artery passed above the upper pole of the kidney and the pelvic colon covered it; the rectum lay close to the inner border. Large renal vessels were seen passing under the sigmoid mesocolon. The kidney was immovable, and covered by vascular peritoneum. The ureter was short. The ovaries lay along the edge of the psoas muscle, half an inch from the deep abdominal ring. The genito-inguinal ligament was seen passing from the anterior pole of the left ovary into the inguinal canal. A crescentic band ran across the pelvis evidently representing Müller's duct, and on the right side a thickened, spindle-shaped swelling 1½ in. long was present; it was a rudimentary uterine horn. The right Fallopian tube bore its fimbriated extremity, which projected normally into the peritoneal cavity. A well-marked *fimbria ovarica* was present. Dr. Marshall then read a paper on *Artificial vagina*, and reviewed various operative procedures for correcting atresia vaginae without subsequent contraction. In some cases the uterus was present; thus the atresia was not necessarily developmental, being not rarely due to inflammatory processes in early infancy; and atresia in adults sometimes followed traumatism at childbirth. In others there was true congenital atresia with absence of the uterus. Pregnancy might follow the formation of an artificial vagina. Operators differed as to the justifiability of operations undertaken to give a coitional vagina when the uterus was absent. Simple splitting of the recto-vesical septum was so fatal that several leading French surgeons in the last century advised against its performance. Plastic operations dated from Heppner, 1872, (*a*) transplanting of skin flaps or epithelial growths; (*b*) transplantation of vaginal flaps taken from cases operated on for prolapse; (*c*) implantation of pieces of peritoneum; (*d*) implanting bowel mucosa. Martin advocated suture of uterine cervix to vulvar orifice after opening of the septum. In the combined abdomino-vaginal operation of Pfannenstiel the cervix was freed by laparotomy after partly opening of the recto-vesical septum from below. The abdomen was then closed, and the cervix pulled down and attached to the vulvar orifice or mucosa of vaginal rudiment. More recently an artificial vagina had been made out of a segment of resected bowel. Sueguireff first recorded in 1904 three cases operated on by his method of transplanting the rectum. The method is objectionable because a sacral anus is left. Baldwin transplanted a segment of ileum. Twelve cases of this method have been reported, and four of Mori's, which differs from Baldwin's in that a single stretch of bowel is implanted instead of a double loop. Dr. MUNRO KERR, in discussion, spoke of a case of atresia where he had operated after Baldwin's method. Dr. ALEX. MACLENNAN read a paper on a method of *Radical removal of the carcinomatous uterus.* Preliminary curettage was done three days before the main operation, when the bifurcation of the iliac artery was identified, the peritoneum in that region incised, and the ovarian and anterior divisions of the internal iliac arteries tied. The ureter was traced into the pelvis, and if it passed into diseased tissue was divided and implanted into the bladder. The peritoneum was incised parallel with the ureter and across the front of the uterus to the opposite side. Then the broad ligaments were separated, and the lateral aspect of the pelvis cleared. The peritoneum behind the broad ligaments was stripped from Douglas's pouch, and the pelvic contents were detached by a digging process and pressed downwards. The uterus was then separated from the bladder and vagina, and the whole mass packed into the pelvis. The loose peritoneum and sigmoid were stitched so as to shut off the peritoneal cavity. The patient was then placed in the lithotomy position and the parts removed from below. The cavity was packed with gauze, which was afterwards gradually removed. The paper was discussed by Dr. BALFOUR MARSHALL and Mr. DUFF.

IN commenting on February 15th on the *Pharmacopoeia* prepared for the use of medical men belonging to the Leicester Public Medical Service, we observed that as the prescriptions were excellent and the compounds inexpensive, it would not be surprising to find the volume adopted in other districts as well as in that for which it was produced. As will be seen by an announcement in our advertisement columns, the book, which is of convenient size for the pocket, has been placed on sale, and specimens can be obtained, price 1s., from the Leicester Public Medical Service, East Bond Street, Leicester. Special terms will be made for quantities, and a special title-page and lettering on the cover will be arranged for orders of 50 and upwards.

Reviews.

GLYCOSURIA AND ALLIED CONDITIONS.

DR. CAMMIDGE is well known for his contributions to the chemistry of the urine, and his book on *Glycosuria and Allied Conditions*[1] is based upon the material submitted to him during the last fourteen or fifteen years. He approaches the subject from the chemical side, and, indeed, claims that it is "essentially a chemical problem." If we hesitate to accept this statement, it is not because we deny the importance of the chemical side of the problem, but because the physiological questions involved are at least as essential, while both chemistry and physiology are only aids to the solution of an obscure clinical problem. If the disease were better understood and its relations to chemistry and physiology definitely settled, a modicum of either would suffice, but, as the surroundings are dark, we grope for light in every direction and accept each scrap of chemical or physiological information in the hope that it may prove of use. The writer on diabetes is obliged to bear this burden, although much of it will doubtless prove to be irrelevant, but at the present time he cannot tell what part may be safely discarded or in what direction to look for the true light.

Out of the 400 and odd pages of which this book is composed, considerably more than half is devoted to the description of the chemistry and physiology of glycosuria. The author finds fault with clinicians for not studying the other carbohydrates which are at times present in the urine, and for using the term "glycosuria" to include all carbohydrates. The answer to the first charge is that these conditions are so rare that the opportunity is wanting. One who has been engaged, like the author of this book, in examining urines containing unusual carbohydrates sent to him from all parts of the country, may get the false impression that these cases are less rare than they really are, even in the practice of hospital and consulting physicians who give special attention to diabetes. The second charge can hardly be true, for no one knowingly speaks of pentosuria as glycosuria, although it is quite possible that any one who was not on the look-out for its occurrence might miss it. As to laevulosuria it is doubtful whether laevulose occurs in the urine by itself, although it is not uncommon in association with dextrose, and any physician who is sufficiently familiar with the problem to be able to detect this would not be likely to fall into the error of terminology involved by speaking of it as glycosuria. As a routine qualitative test for sugar the author prefers Benedict's modification of Fehling's solution, and gives a formula for its preparation.

The first three chapters are devoted to the chemistry of sugars and other reducing substances and of the acetone bodies; the fourth chapter to experimental glycosuria; the fifth to alimentary, transitory, and intermittent glycosurias. It is quite probable that temporary or intermittent glycosuria is due to inhibition of the glycogen-forming function of the liver, and it may be in this way that a dose of alcohol causes glycosuria in persons who are not actually diabetic. We doubt whether the opinions of Loeb on hereditary diabetes are well founded, especially when he asserts that the hereditary form is seldom met with in youth, nor do we believe that it can be usefully differentiated as a separate form of the disease.

In Chapters VI, VII, VIII, and IX the author deals with persistent glycosuria or diabetes, and describes its symptoms, diagnosis, pathology, and treatment. He states clearly and concisely the various and conflicting theories that are now current, and inclines to the view which von Noorden has of late adopted. It would be unfair to expect Dr. Cammidge to do more than this, and we recognize fully the ability with which he has placed before his readers a faithful exposition of the various problems as they appear at the time of writing; the numerous additions made to this literature render the picture as shifting as that of a kaleidoscope, and the more carefully a writer follows the most recent investigations the more likely he is to find that his picture needs constant alteration. Chapter IX deals with the dietetic treatment of diabetes, and contains tables which are carefully worked out so as to show the weight of each particular article of food and its contents in protein, fat, carbohydrates, and caloric value. Why margarine takes the place of butter is not explained in the text; if it is because margarine is less likely to form oxybutyric acid, this rather theoretical objection should not be allowed to deprive diabetics of this article of diet where there is no evidence of acidosis.

In connexion with the diagnosis of pancreatic diabetes, the author refers to his "pancreatic reaction," and gives a modification of his original plan, which he recommends as preferable to that he originally described. It has the further advantage of being quantitative, but for his description the reader must be referred to the work itself. He mentions adrenalin mydriasis as a means of recognizing an affection of the pancreas, but quotes no personal experience to add to that of those who appear to have found it a more or less reliable test.

In the description of von Noorden's oatmeal cure he conveys the impression that von Noorden would keep a patient upon this diet for several weeks with only intervening days of green vegetables. Von Noorden's own practice as described in his most recent book is that after a course of one or two days of vegetarian diet or a single day's fast, he gives two days of oatmeal diet, then one or two days of vegetarian diet, after which the patient returns for some days to a mixed restricted diet suitable to his case, and this alternation may be repeated as often as seems desirable. On page 304 Dr. Cammidge makes the statement that "more than a hundred years ago Prout pointed out the great advantage of limiting the quantity of food in diabetes"; but Prout only took his degree in 1811, and the first mention of the desirability of limiting the quantity of food is in the second edition of his book published in 1825. On page 320 he refers to the danger of diabetic patients being allowed to take an unlimited quantity of saccharine; as no serious ill effects from the ordinary use of this substance have been observed in the thirty years during which it has been widely in use the warning is hardly needed. A more serious mistake is the recommendation to push codeine. We have seen the opium habit developed in not a few cases of diabetes by the unwise pushing of opiates without the smallest benefit to the disease and to the incurable ruin of the patient. When a case of diabetes comes under treatment it may be proper to prescribe a nightly dose of opium for a few nights; but when the glycosuria has been controlled it is better to stop it, as it increases constipation and checks secretion without causing further reduction of sugar excretion. In the doses which Dr. Pavy recommended codeine it is only a *placebo*, while in larger doses it is an expensive substitute for morphine.

[1] *Glycosuria and Allied Conditions.* By P. J. Cammidge, M.D.Lond. London: Edward Arnold. 1913. (Med. 8vo, pp. 470. 16s. net.)

THE MAYBRICK CASE.

THE most recent addition to the series of "Notable English Trials" comes from the versatile pen of Mr. H. B. IRVING, author and actor too. It deals with the ever-green story of the *Trial of Mrs. Maybrick*[2] at Liverpool in 1889 for the murder of her husband by arsenical poisoning. In his introduction Mr. Irving gives a masterly summing-up of the case and the events subsequent; next follows a table of important dates in the history of the case, a list of counsel, all of whom attained eminence in their profession; then we have a full and detailed report of the speeches, evidence, and summing-up, which occupied together seven days, after which the jury, having deliberated some thirty-five minutes, returned a verdict of "Guilty," and Mr. Justice Stephen, without comment, sentenced the prisoner to death. The verdict was received by the public at large with considerable astonishment. The *Times* of the following day wrote: "It is useless to disguise the fact that the public are not thoroughly convinced of the prisoner's guilt. It has been noticed by them that the doctors differed beyond all hope of agreement as to the cause of death." Petitions for reprieve poured into the Home Office from all parts of the country, the signatures

[2] *Trial of Mrs. Maybrick.* Edited by H. B. Irving, M.A.Oxon., author of *The Life of Judge Jeffreys*, *French Criminals of the Nineteenth Century*, etc. Edinburgh and London: William Hodge and Company. 1913. (Demy 8vo, pp. 410, with 5 illustrations. 5s.)

amounting to nearly half a million, including a petition from the medical men of Liverpool, where the trial had been held. These gentlemen based their protest on the ground that the symptoms of arsenical poisoning during life and after death were insufficient, that only the discovery of arsenic in the viscera suggested such a cause of death, and that the quantity of arsenic found in the viscera was less than in any previous case. The *Lancet* published a long article highly unfavourable to Mrs. Maybrick. The BRITISH MEDICAL JOURNAL was hardly less unfavourable; it published letters from seven professors of medical jurisprudence in different parts of the country; of these, four supported and three dissented from the verdict. The gallows had already been erected in Walton Jail, within hearing of Mrs. Maybrick, when on August 22nd the Home Secretary's decision was announced and the punishment commuted to penal servitude for life, "inasmuch as, although the evidence leads clearly to the conclusion that the prisoner administered and attempted to administer arsenic to her husband with intent to murder, yet it does not wholly exclude a reasonable doubt whether his death was *in fact* caused by the administration of arsenic."

Mrs. Maybrick, having served fifteen years' imprisonment, was released in January, 1904, and left England. The vital question of this trial was whether or no arsenic was the cause of death. A number of competent medical authorities who gave evidence all agreed that the cause of death was gastro-enteritis. Those called for the prosecution declared that the symptoms definitely indicated arsenic as the irritant poison which had set up gastro-enteritis; the witnesses for the defence were equally confident that the inflammation of the stomach might have been caused by sausages, cheese, lobster, or some irritant substance other than arsenic. The learned judge in his summing-up of the evidence on this point told the jury:

> These parts may be passed over as really more fit for medical jurisprudence than for a jury actually engaged upon the administration of criminal law; you probably are men engaged in different ranks of life, and I should think it probable that a very small number of you have any other knowledge of medicine than that which we all pick up in the course of our lives and in the course of our general experience. This would be a kind of guide, and you must infallibly rely upon it to a greater or less extent.

The jury, advised to rely infallibly upon the knowledge they "had picked up in the course of their general experience" of the causes of gastro-enteritis and the symptoms of arsenical poisoning, was composed of three plumbers, one painter, two farmers, a wood-turner, a provision dealer, a grocer, a baker, an ironmonger, and a milliner. The judge, in expressing great diffidence in his own powers of digestion of the medical evidence, added:

> I would not for the world say anything disrespectful of a science to which we all owe so very much; but it is a science based more or less upon conjecture, and good sense and good fortune in making guesses. A celebrated physician in olden times said that he spent his time in putting drugs of which he knows little into a body of which he knows less. This is one of those pointed sayings which are convenient, but there is a degree of truth at the bottom of it. Persons who are employed for the time being in the tremendous functions confided to us ought to be very modest in their conclusions. That modesty cuts, on an occasion like this, all ways. It cuts to a certain extent against the prosecution, and it cuts against the defence, and it diminishes and lowers the degree of assurance with which we receive medical evidence of all kinds.

It was unfortunate that the court should have displayed so much modesty about the only essential issue of the trial, for unless the jury were satisfied beyond a doubt that the cause of death was arsenical poisoning the charge of murder must absolutely fail.

But other features of the case indicating motive and opportunity for the commission of the crime were handled with less modesty. Maybrick, 24 years older than his wife, was at 50 years of age a confirmed hypochondriac with an unhealthy appetite for drugs, chiefly of a stimulating nature. On May 8th Mrs. Maybrick wrote a fatal letter to a man, Brierley, with whom she had relations. Mr. Irving gives a facsimile of this letter, which was intercepted by a servant; it contained this passage:

> Since my return I have been nursing M. day and night. *He is sick unto death.* The doctors held a consultation yesterday, *and now all depends upon how long his strength will hold out.* But, my darling, relieve your mind from all fear of discovery now or in the future. He has been delirious since Sunday.

The learned judge said, "Now that was not true, as she knew, having been with him all the time, and so far from being sick unto death, for some days after that the doctor expected a favourable result." On May 9th a nurse swore that she saw Mrs. Maybrick dealing surreptitiously with a bottle of meat-juice which was afterwards found to contain arsenic. On May 11th Maybrick died; two days later the *post-mortem* examination was made, and traces of arsenic were found in his viscera.

The house was searched at the time of the death and there was found in various bottles and other articles, including a handkerchief and the pocket of a dressing gown belonging to Mrs. Maybrick, sufficient arsenic to poison many people, assuming 2 grains to be a fatal dose. We have not space to give the evidence in fuller detail. Sir Charles Russell, afterwards Lord Chief Justice of England, who defended Mrs. Maybrick, spared no pains during the rest of his life in repeated efforts to secure her release, declaring that though the means of poisoning her husband were undoubtedly within reach of Mrs. Maybrick, there was no direct evidence of her having administered arsenic to him, that the symptoms were agreed by all to be those of gastro-enteritis, but that while some witnesses attributed the disease to arsenical poisoning, there was a strong body of evidence to the contrary. And at this we must leave a case of deep interest, with a recommendation to read Mr. Irving's excellent work, one of the most interesting features of which is a letter, which we never remember to have seen before, written to her mother by Mrs. Maybrick on June 28th, whilst in prison awaiting her trial:

> I sincerely hope my solicitors will arrange for my trial to take place in London. [This, of course, could be arranged upon the application of the prisoner for a writ of *certiorari*.] I shall receive an impartial verdict there, which I cannot expect from a jury in Liverpool, whose minds have come to a moral conviction *en attendant*, which must influence their decision to a certain extent. The tittle-tattle of servants, the public, friends and enemies, and from a thousand by-currents, besides their personal feeling for Jim, must leave their traces and prejudice their minds no matter what the defence is.

Her advisers, however, decided it was the stronger and wiser course to face a trial in Liverpool.

To the many theories that have been advanced with regard to the Maybrick case may the writer of these notes add one of his own—namely, that if the prisoner had had her own way and gone for trial to London she would have enjoyed a far better chance? This view is confirmed by some conclusions embodied in a document drafted on her behalf in 1892: (1) That the judge in summing-up placed himself in a position where his mind was open to the influence of public discussion and prejudice, to which was probably attributable the evident change in his attitude between the first and second days; and he also assumed facts against the prisoner which were not proved; (2) that the jury were allowed to separate and frequent places of public resort and entertainment during such day. This latter was, of course, grossly improper, and could not have happened in London. But there was no Court of Criminal Appeal in those days; neither was the witness-box open to the accused as to-day. According to the verdict of the Lancashire jury of 1889, Mrs. Maybrick is fortunate in having lived so long. According to the commentator of to-day, she is unfortunate in having lived too soon. That is to say, before the creation of the Court of Criminal Appeal.

CLINICAL DIAGNOSIS.

Clinical Diagnosis[3] by Dr. J. C. TODD, is a laboratory manual which can be thoroughly recommended. It keeps pretty well to the conventional lines, but it is a distinct improvement on many of its predecessors of similar scope, not only in its illustrations, which for the most part are excellent, and its up-to-dateness, but also in its general

[3] *Clinical Diagnosis: A Manual of Laboratory Methods.* By James Campbell Todd, Ph.B., M.D. Second edition. Philadelphia and London: W. B. Saunders Company. 1912. (Pp. 469; with 12 coloured plates. 10s. 6d. net.)

lucid method of treatment. It deals with all the examinations which the clinician may have to undertake in the course of his work, and it includes special chapters on animal parasites, vaccines, and bacteriological methods. The book is of convenient size, and it is printed in a manner which invites perusal and ensures ease of reference.

The little book on *Systematic Case-taking*,[4] by Dr. H. L. McKISACK of Belfast, adds another to the rather numerous list of similar manuals. As it makes no pretensions to be comprehensive, there may be good reason for omissions and for the summary fashion in which certain subjects are discussed, since it is intended as a guide to students in case-taking, and elaborate discussion of methods of diagnosis which practitioners would demand do not come within its scope. The book has the merits of being well written, and of describing clearly that which the author desires to lay before his readers, but it continues the terminology of the physical signs in the chest which has confused many generations of students. Thus, on p. 49 the tympanitic note is said to be of a drum-like character, and on the next page emphysema is described as giving rise to a form of resonance which is also "drum-like." The descriptions of vocal resonance and pectoriloquy are not quite clear. Unless these sounds are defined and the student is referred to something with which he can always refresh his ear there is danger that he will never really know what is meant by the terms; where words used are not English it would be well to explain them, otherwise students may continue to use words all their lives which they do not understand. In the section on the sputum the usual classification of the naked-eye appearances might have been given. In describing inflation of the stomach, the quantities of tartaric acid and sodium bicarbonate to be used should surely be stated, and in saying that splashing sounds are evidence of dilatation of the stomach the author should point out what means there are, if any, of distinguishing between splashing sounds produced in the stomach from those produced in the adjacent bowel. The radiography of the stomach is too important to be dismissed in less than two lines, while in the description of Ewald's test breakfast "a couple of slices of bread with one or two cupfuls of tea" is not an adequate statement, and is likely to lead to inaccurate results. Further, when the test for lactic acid is spoken of it should be stated that this acid may be present in bread, and that for this test the meal should consist of gruel. Should not the student be taught to look for traces of blood in the faeces by chemical examination, and, on the other hand, to look for blood in the urine with the microscope and not by chemical tests? The taking of alcohol might have been mentioned as one of the causes of the temporary appearance of sugar in the urine. The modification of Doremus's ureometer is by Heintz, not by "Hind." The volume concludes with a table for the differentiation of painful throat affections and brief descriptions of methods of staining micro-organisms, of Widal's and Wassermann's reactions, of the estimation of free hydrochloric acid and total acidity of stomach contents, of the mode of employing the diazo reaction and Russo's methylene blue reaction, a very short and hardly adequate account of electrical examination occupying little more than a page. There are tables of states of unconsciousness, of the various forms of paralysis, and of the clinical tests for tuberculosis. It will be seen, therefore, that it is a comprehensive manual for students.

ELECTRO-THERAPEUTICS AND RADIOLOGY.

DR. MARTIN'S work on *Practical Electro-therapeutics and X-ray Therapy*[5] differs little in intention and arrangement from a number of others issued on both sides of the Atlantic during recent years. It is, however, an interesting compendium from an American pen, and is not too heavily freighted with snippets from other people's observations. The well-illustrated section on the *x* ray in fractures, dislocations, and bone diseases should be of considerable value as a means of reference. There is also a chapter on forensic radiography, and here the author tells a story from his experience. He was called as an *x*-ray expert in a suit for damage, when the learned counsel, having gathered apparently from an examination of cameras that lenses have a wide range, launched the abrupt and it-settles-the-question imperative, "Now tell the court with what kind of lens you made these pictures"! And this happened "only a short time ago."

Any one who sets out, at the present day, to write a textbook of *x*-ray diagnosis and treatment, undertakes a very formidable task. Bones and joints alone would fill a full-sized textbook, and the same is true of diseases of the chest, and equally true of alimentary disorders. Large books have been written on genito-urinary radiography, and still larger books on *x*-ray therapeutics. *X*-ray apparatus and technique offer material for an entire book. Messrs. BYTHELL and BARCLAY'S book[6] deals with all these topics in a space of 140 pages. The authors state specifically that their book is not intended to be a complete textbook of the subject, but rather a general outline, their object being to enable medical men to learn enough about the subject to render them capable of selecting from their patients such cases as are suitable for *x*-ray diagnosis or treatment. The authors point out that most books on radiography are written for the *x*-ray specialist, and contain much technical detail that is of no interest to the medical practitioner. In the present book such details are placed in a short introductory chapter and a short appendix. In each chapter a selection of subjects has been made for discussion, and a further selection for illustration. Naturally many subjects appear to have received too scant notice, but the text, as far as it goes, is full of practical common sense, and the authors have done wisely in confining their descriptions to conditions they have actually seen. The illustrations, also, are taken from their own cases, and are excellently reproduced in the form of full-page plates on art paper.

At this late day in electro-therapeutics it seems scarcely possible for a practical summary of the whole subject, including *x* rays and heat and light radiations, to be brought within the limits of rather less than 70,000 words. Yet a concise pen on the other side of the Channel has accomplished as much, and in Dr. G. GEIGER'S compendium of medical electricity[7] the ordinary worker who follows French will find, if not all that he requires to know, at least a useful guide for workroom and hospital reference. A novel feature which we do not remember to have seen attempted in the many similar works coming from the British and American press in recent years is a table of radiographic exposures, calculated for twenty or thirty different parts of the body under the various conditions of instrumentation. The length of exposure depends upon so many factors that it must have been difficult to present it in tabular form, and, having done so, the advantage remains a little questionable. At the end of the book indications are given for the *x*-ray and other treatment of a number of conditions, which are arranged alphabetically, but it is one of several drawbacks of the kind in a foreign manual that the *x*-ray quantities are expressed in units which are not very familiar to the British radiologist.

NOTES ON BOOKS.

WHEN Cowper wrote his well known lines in praise of "the cups that cheer but not inebriate," he had probably little or no knowledge of the complicated process by means of which his favourite beverage had been brought from its home in an Eastern tea-garden to his fireside at Olney. Even at the present day there are doubtless many tea

[4] *Systematic Case-taking.* By Henry Lawrence McKisack, M.D., M.R.C.P.Lond. London: Baillière, Tindall, and Cox. 1912. (Post 8vo, pp. 178. 3s. 6d. net.)

[5] *Practical Electro-therapeutics and X-ray Therapy.* By J. M. Martin, M.D. London: George Keener and Company. 1912. (Med. 8vo. pp. 446; 219 illustrations. 18s. net.)

[6] *X Ray Diagnosis and Treatment: A Textbook for General Practitioners and Students.* By W. J. S. Bythell, B.A.Cantab., M.D.Vict., and A. E. Barclay, M.D.Cantab., M.R.C.S., L.R.C.P. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1912. (Med. 8vo, pp. 160; figs. 118. 15s. net.)

[7] *Précis pratique d'électricité médicale.* By G. Geiger. Paris: Jules Rousset. 1913. (Crown 8vo, pp. 409; figs. 122. Fr. 6.)

drinkers who are in much the same plight, and to them, as well as to the children for whom it is primarily intended, Miss EDITH A. BROWNE's attractive little book on *Tea* (which forms the third volume of the excellent "Peeps at Industries" series),[8] should prove a source both of interest and instruction. Miss Browne is well fitted to play the part of guide to her readers in their tour through the tea-producing countries of the world. Her book, she tells us, is "the result of experience, observation, information, and pictures harvested on the spot"; and whilst her mastery of the subject shows itself in almost every page, she never allows her knowledge to become unduly obtrusive. The history of tea, that "sober, sage, and venerable liquid," from the plantation to the tea table, is told in simple yet graphic language; and the author has contrived to invest the most prosaic details of the tea trade with something of the glamour of the East. The book is rendered doubly interesting by the many excellent photographs which serve as illustrations to the text.

A directory that contains full particulars of the members of any given profession must always be a useful addition to the library of a member of that profession; but nowhere is the need for such a book of reference felt more keenly than in the educational world. Hitherto the *Schoolmasters' Yearbook* has provided all necessary information with regard to the male members of the teaching profession; and now the repeated applications of women teachers to be included in the *Yearbook* have resulted in the compilation of a companion volume called *The Directory of Women Teachers*.[9] This directory has been arranged on the same lines as the *Yearbook*, and contains, in addition to the names, addresses, and short biographies of women engaged in the higher and in secondary education, a list of the secondary schools, training colleges, universities, and other kinds of educational establishment for girls in every part of the kingdom, together with a quantity of miscellaneous information likely to be of use to those engaged in tuition. The arrangement of this unwieldy mass of material leaves nothing to be desired; each entry is clear and concise, and great care has been taken to avoid overlapping or repetition. The annual publication of a similar volume should be of the greatest service, not only to the teachers themselves, but to parents who are in need of advice and guidance as to where and how to bring up their daughters.

In a paper on alcoholism and degeneracy[10] contributed to the first International Eugenics Congress MM. MAGNAN and FILLASSIER have collected some interesting statistics dealing with the experience of the City of Paris and the Department of the Seine in respect of insane persons admitted to asylums. The figures illustrate the frequent association of alcoholism with stigmata of degeneracy, and the authors direct attention to the burden on society which this large army of incompetents represents. From 1887 to 1911 there were 89,728 admissions; of these, 27,315 were alcoholics. Naturally figures of this sort do not throw much light upon the questions as to whether alcohol is a *vera causa* of insanity or whether alcoholism is merely a stigma of degeneracy, but they are additional evidence of the magnitude of a problem which has yet to be faced in its entirety by statesmen of all countries.

We have received a copy of the *Minutes of the General Medical Council and of its Various Committees for the Year 1912*,[11] being the forty-ninth volume of the series. Rather less than one-half of the volume, which contains 461 pages, is occupied by the minutes of the Council itself; the rest contains the minutes of the Executive Committee and of the Branch Councils, and twelve reports of committees to which matters were referred by the Council. The *General Index to the General Medical Council*,[12] vols. xl to xlix, which has also been received, contains 153 octavo pages. The issue annually of a revised edition of an index to the minutes of the Council greatly facilitates reference to matters dealt with by that body in previous years.

[8] *Peeps at Industries: Tea.* By Edith A. Browne. Containing 24 pages of illustrations from photographs. London: Adam and Charles Black. 1912. (Post 8vo, pp. 96. Price 1s. 6d. net.)

[9] *The Directory of Women Teachers, and other Women engaged in Higher and Secondary Education.* London: The Yearbook Press. 1913. (Cr. 8vo, 1 p. 135. 5s. net.)

[10] *Alcoolisme et Dégénérescence.* Par MM. Magnan et A. Fillassier. Charles Knight and Co. (Pp. 15.)

[11] London: Spottiswoode and Co. 1913. (12s.)

[12] London: Spottiswoode and Co. 1913. (2s. 6d.)

MEDICAL AND SURGICAL APPLIANCES.

A Simple Ether Can.

DR. W. J. MCCARDIE (Birmingham) writes: The free use of ether by the open method and the fear of the result of breakage of a glass bottle have caused me to have made a simple metal can of large capacity (11 oz.). It is made of thin metal, which quickly takes up heat from the hand, is inexpensive and unbreakable. It has no neck, and therefore there is no waste of neck space, which is a drawback to glass bottles. The nozzle is simple in form and covered with two screw caps. Being ether-tight the can may be carried in any position in the surgeon's bag. Any form of dropper can be easily fitted. The can has been made for me by Messrs. Mayer and Meltzer.

THE MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

THE quarterly meeting of the Association was held at the Darenth Industrial Colony, Dartford, on February 20th, under the presidency of Dr. J G. SOUTAR.

Mental Deficients.

During the morning members inspected the various centres of activity in the Colony, including the female and male workshops and wards for adult imbeciles, for the feeble-minded section, and for imbeciles under 16 years of age—three separate classifications of cases. At the luncheon which followed, the PRESIDENT thanked, on behalf of the Association, Mr. Helby, the Chairman of the Council Committee, and Dr. Rotherham, Medical Superintendent, for the interesting evidences of good training so abundant in the institution, and surprising even to those who knew something of such work. He thought that if members of the Cabinet, and others in the House, could visit the institution, the Mental Deficiency Bill would rapidly be passed through all its stages, since it would be realized that it would confer upon thousands of neglected persons the boons received by the inmates of Darenth Colony. Dr. ROTHERHAM, in a brief reply to the President's remarks, praised highly the capacity and efforts of the instructional staff, who were all skilled in their work before they took up the posts. Mr. HELBY said that the success of the institution was due to the continuous and harmonious efforts of the medical and instruction staff, and quoted the following passage from the last report of the Commissioners in Lunacy, issued a few weeks ago:

> We cannot conclude without expressing our pleasure and satisfaction with all we saw and learnt during our visit of inspection, and we desire to record our impression that the work of the institution is being carried out on well-planned lines, and with much skill and thoughtfulness in organization, and that the object in view, namely, the adequate training and occupation of the imbecile class, is being attained in a most satisfactory and gratifying manner.

Criminal Lunatics.

The meeting passed the following resolution on the subject of the detention of criminal lunatics in county and borough asylums, and appointed a deputation on the subject:

> That the Parliamentary Committee consider it is most undesirable that criminal lunatics be sent to county and borough asylums, and recommend to the Council that the Association be asked to express this opinion to the Home Secretary.

Assistant Medical Officers in Asylums.

Dr. J. BEVERIDGE SPENCE, in a paper on this subject, referred to the recent discussion in the BRITISH MEDICAL JOURNAL, and said that he had been for some time of the opinion that something should be done to improve the position of these officers; he had been in full accord with the work of a committee of the Medico-Psychological Association, which had issued an interim report, advocating a more advanced education for applicants for these posts. On the question of the facilities to continue the study of

psychological science at some centre—leave being granted for that purpose—the money factor had to be considered. It would, perhaps, be really necessary to increase the rate of remuneration in order to attract to the speciality the right kind of man, especially now that in other branches of the profession young men were advertised for at salaries of £400 and £500, with greater individual liberties than those known to assistant medical officers of asylums. In order to collect information on the subject he had sent out forms to the superintendents of 94 asylums, and he gratefully acknowledged the courteous response of 92 of those gentlemen. Of these 17 asylums had only one assistant medical officer. The average minimum salary of the senior assistant medical officer was £224, and the average maximum £309, exclusive of emoluments; the lowest was £150 rising to £200, and the highest £330 with a maximum of £430. The salaries of medical officers junior to the first seemed to vary from an average minimum of £160 to an average maximum of £208, the highest being £185 rising to £330, and the lowest £130 rising to £150. The emoluments he found difficult to tabulate. In nearly every instance the medical superintendents approved of their senior assistant being married. Only eight regarded the idea unfavourably, while a few thought permission might be granted if accommodation were provided. There seemed, however, to be a feeling against this permission being granted to the second assistant. There were now married assistant medical officers in twenty-three asylums, while in sixty-three institutions these officers were not married. Dr. Spence then proceeded to consider the question of accommodation for married assistant medical officers under three heads: (1) Those who had rooms in the asylum main building; (2) those occupying a house on the asylum estate; (3) those who rented a house outside the asylum grounds. He made a comparison of the conditions and salaries of assistant medical officers of asylums with those of somewhat similar officers in prisons, to the advantage of the latter. He counselled the association to continue its efforts to better the lot of the former, and said that personally he was in favour of an advance in the average salaries of assistant medical officers of asylums.

Industrial Training at Darenth.

Dr. F. O. SPENSLEY, Senior Assistant Medical Officer (Darenth), said that forty years ago, at Hampstead Asylum, under the Metropolitan Asylums Board, an attempt was made to give the patients under 16 years of age some instruction in music, singing, and simple work in schools. So successful was this that the Board suggested the building of a schoolroom and shoemakers' and tailors' shops. In 1874 the Board purchased a site for the separate treatment of imbecile children; meantime it used the London Orphan Asylum at Clapton for the purpose, and Dr. Fletcher Beach was its first medical superintendent. In 1876 Darenth Training School was built. In the first year the patients' labour realized £66 5s. 7d. In order that the training might not be thrown away, it was decided to build, adjacent to the schools, two blocks for 120 males and 120 females, adults, the Local Government Board insisting, however, on the elimination of the hopelessly "incurable," a term which the subcommittee altered to "unimprovable." Subsequently these two wards grew into the adult asylum, with 1,052 beds. The author traced the growth of the institution to its present dimensions and many-sided activity, including mat-making, brush-making by wire-drawing, pan work, envelope and paper bag making, tin-smith work, carpentry, book-binding, and printing. Patients of both sexes were drilled, to the obvious improvement of their physique and deportment; 835 out of the total of 1,064 adult imbeciles were now undergoing industrial training. At present a wide and clearly-marked line was drawn between the inhabitants of the pavilions and those of the remainder of the institution. They were admitted classified as feeble-minded, and were to be kept quite apart from the certified patients. It would, he submitted, be difficult to find a better illustration of the impossibility of determining an arbitrary line of demarcation between an imbecile and a feeble-minded person. Among the so-called feeble-minded in the institution were many patients whose mental state was far below that of many of the certified imbeciles. He sketched a different classification, and described the methods pursued to encourage each patient to do his best, and therefore improve as far as possible. Last year the industries realized £12,367, an increase of £8,000 in five years.

Dr. SHUTTLEWORTH, in discussing the paper, alluded to the transfer from Darenth to Rochester House, Ealing, of "improvable" cases in 1900 to 1904 for the purposes of industrial training. He agreed that there was very little difference between the high-grade imbecile and the ordinary feeble-minded person.

The discussion was continued by Drs. POWELL, LANGDON-DOWN, CORNER, and FLETCHER BEACH (the first superintendent of the institution), and Dr. SPENSLEY replied.

ONE HUNDRED YEARS AGO.

THE KNOWLEDGE OF TROPICAL DISEASES IN 1813.

THE first quarterly part of the *Edinburgh Medical and Surgical Journal* for 1813 would nowadays probably be described as a "tropical diseases number"; for out of twelve original communications which it contained five were written by medical men abroad, and dealt with maladies met with in India and the Leeward Islands. It may not be uninteresting—it may even be profitable—to spend a few minutes in the consideration of what was known about these diseases a hundred years ago as revealed in the accredited medical journals of the time.

The first article was by Mr. George Playfair, who is described as Assistant-Surgeon, Bengal; its subject was the good effect of treatment by a combination of ipecacuan and laudanum in dysentery; and it came in the form of a letter from Calcutta, bearing the date April 11th, 1812. The first paragraph is more of the nature of a covering letter, and would hardly be printed as part of the paper by the editor of to-day. Here it is:

> Should the following trivial remarks, on a very simple method of curing dysentery, have anything new, interesting, or useful, you may make what use of them you please; and should you consider them of any importance, you may give the result publicly through the medium of your journal.

This mode of commencement is not unfamiliar to the editors of to-day, whatever it may have been in 1813.

Mr. Playfair deserves praise for the prompt and brief manner in which he states the chief conclusion of his article; it is that ipecacuan given in doses from 30 to 60 grains, with an equal proportion of laudanum acts well in cases of dysentery. Further, he is to be commended for the frank way in which he disclaims all originality: "I recollected to have seen in, I think, a Medical Review, that ipecacuan and opium had been tried in large doses with effect." He tells how he tried the plan of combining the two drugs in one large dose when he was surgeon of an Indiaman in the years 1803-4, and was losing a number of his dysentery patients; after giving the ipecacuan and laudanum (from half a drachm to a drachm of the former and from thirty to sixty drachms of the latter), he confined the man for some hours to a horizontal position to counteract the tendency to vomiting; but even if the first dose was brought up the second was commonly retained. He narrates four illustrative cases, stating as was common in those days, the names of his patients—namely, D. Morison, W. Troy, Garragin, and Dawson; and he says he could have given other instances. The good effect was immediate, seldom was more than one dose required to cure, but the treatment had to be employed at the beginning of the attack, for if the disease had become chronic the stomach was too irritable to retain the medicine. One of the patients was a seaman, and the others were privates "of his Majesty's 65th regiment." He gave in one case some rhubarb, calomel, and magnesia, in addition to the laudanum and ipecacuan, but not until the dysentery had stopped. "I claim not," he writes, "the honour of having been the inventor of this simple formula"; but he evidently believes it has only to be made widely known in order to save many lives.

Events have shown that Mr. Playfair was not deceived in the reliance he placed on this combination of ipecacuan and laudanum, for throughout the course of the nineteenth century medical men in various parts of the world continued to report well of these drugs in dysentery. There were groups of cases in which failure had to be recorded,

but on the whole the verdict has been favourable. Mr. Playfair wrote his article in 1812, and he was in Calcutta when he did so. It is, therefore, something of a coincidence that in 1912 Major Leonard Rogers, Professor of Pathology in Calcutta, should have been writing in praise of ipecacuanha in dysentery. His papers, published in this Journal[1] have done much to justify a belief not only in the good effects of ipecacuan in dysentery, but also in its specific action on the amoebae which are recognized as the cause of amoebic dysentery and hepatitis. Professor Rogers encountered the same difficulty which met Mr. Playfair in giving ipecacuanha, namely, the tendency the stomach showed to reject the large doses which were necessary to produce a curative effect; but he has surmounted it in a different way, namely, by giving a soluble salt of emetine (the principal alkaloid of ipecacuanha) by hypodermic injection. Further, he has found that emetine so given serves as a means of distinguishing between amoebic dysentery and bacillary dysentery, and the other non-amoebic causes of blood and mucus in the stools. If given in sufficient doses it does good in the amoebic form, whilst it has no effect on the other diseases. Perhaps this may serve to explain some of the failures of ipecacuan in dysentery which have from time to time been reported. Such modifications have a hundred years effected in the use of ipecacuan in dysentery.

Mr. Playfair's article is followed by one on "Cases of Hydrophobia, treated, one of them successfully, by Mr. F. Tymon, Assistant Surgeon, H.M. 22nd Light Dragoons; with Observations by Dr. A. Berry, of the Madras Establishment, Proceedings of the Medical Board, and Resolutions of the Honourable Governor in Council, in reference thereto." This article, or rather this little sheaf of papers—for which, writes the editor in a footnote, "we are indebted to Mr. James Kellie, Assistant Surgeon at Bangalore, and to Dr. Shoolbred, Surgeon to the Presidency at Calcutta"—is in its turn succeeded by one by Dr. John Shoolbred himself on a "Case of Hydrophobia successfully treated." The successful treatment in these cases was bleeding. In Mr. Tymon's first patient the bleeding was only to 15 oz., and it produced no good effect, but in the second the bleeding was at once carried out, until "scarcely a pulsation was to be felt in either arm," and the result was recovery. Dr. Andrew Berry, in his observations on the case, regarded it as a real cure of hydrophobia, and he laid stress on the necessity for the abstraction of a large amount of blood. He noted that Dr. Fothergill, as far back as 1774, had published a case in which the patient had been blooded, but only to the extent of 6 oz.; it was insufficient to produce a cure. The Medical Board, in commenting on these cases, strongly pressed the importance of bleeding early in hydrophobia, and to such an extent as to produce fainting; and Dr. Shoolbred, in connexion with his successful case, also emphasized the necessity of opening the vein by a large orifice, of allowing the blood to flow quickly, and up to fainting ("ad animi deliquium"). The Medical Board pointed out that a previous successful case had been reported by Drs. Burton and Rush of Philadelphia in 1805. This was doubtless the case recorded by R. Burton in the *Medical Repository* of New York (vol. viii, p. 15, 1805). Dr. Shoolbred's patient was a native, named Ameir, a "Muselman Bhestie (water-carrier)," and there seems to have been no doubt that he was suffering from rabies. A most graphic account is given of his symptoms; indeed, Dr. Shoolbred's paper is admirable both in its descriptions and in its survey of the knowledge then current regarding hydrophobia. He is rather hard put to it to explain why previous cases in which massive bleedings had been performed had yet proved fatal. There was, for instance, the patient who was bled by Dr. Rutherford of Edinburgh to the extent of 66 oz., but who nevertheless died; the untoward issue is ascribed by Dr. Shoolbred to the fact that the 66 oz. had been taken away *gradually*—not a very convincing explanation, one thinks.

The use of bleeding in hydrophobia is now only of historical interest, for Pasteur's method of prevention by inoculation in the incubation period has replaced all other plans; and a disease which, when established, is incurable can now in the great majority of instances be prevented, if dealt with promptly. Still, Mr. Tymon's observation made no little stir at the time. Mr. Bampfield, writing on bleeding in hydrophobia in the *Medical and Physical Journal* for December, 1812, had heard of the Indian case, curiously enough through a short summary in the pages of the *Kilkenny Chronicle*, but did not know the authority on which it stood; and, in Germany, Vogelsang referred in 1815 to Tymon's method of treatment.[2] In that year (1815) Albers and Bellingham each reported an unsuccessful case, the one in the *Edinburgh Medical and Surgical Journal* and the other in the *London Medical and Physical Journal*; thereafter the subject was allowed to drop, although Edmonston was still writing about it in 1816.[3] Yet Dr. Shoolbred's paper is worthy of being read in 1913, if only for its realistic description of an attack of hydrophobia.

A few words must suffice for the remaining two papers on tropical diseases in this old journal. They both dealt with yellow fever, or, as it was then sometimes called, tropical or Caribbean fever, and especially with the depletory method of treating it—namely, by means of bleeding, free purgation, and the cold affusion; and they both referred back to earlier contributions on the same disease in the preceding volume of this journal. They are interesting instances of the way in which naval surgeons and physicians were at that time building up a knowledge of tropical medicine. They remind us also that British ships were cruising much in West Indian waters in these years (1812–13), for this country was at war with America, and had also to keep watch against French privateers in the Caribbean Sea. The papers were written from Guadeloupe (not finally ceded to France till 1816) and from the Leeward Island station.

The study of tropical diseases was obviously in its infancy in 1813; but there were indications that British medical men in India and in the West Indies were beginning to turn their attention to it, being forced to it indeed by the mortality from such maladies which was making itself felt in the troops stationed abroad and among the sailors manning the Indiamen and the fighting frigates of the time. There were no schools of tropical medicine in those days such as are to be seen now; but there was already a clear indication of the necessity which was to be laid upon Great Britain of the later nineteenth and of the earlier twentieth centuries to send forth of the best of her medical sons to discover the cause of Malta fever, to unravel the problem of sleeping sickness, and to learn to stay many another scourge existing in these tropical countries over which she has been placed as ruler, and for which she has already paid a price in blood.

[1] British Medical Journal, June 22nd, 1912, p. 1424; August 24th, 1912, p. 405; September 28th, 1912, p. 828.

[2] *Journ. d. pract. Heilk.*, xli, p. 8, 1815.

[3] *Lond. Med. Repostt.*, v, p. 466, 1816.

ROYAL MEDICAL BENEVOLENT FUND.

At the February meeting of the Committee twenty-three cases were considered and grants amounting to £222 voted to twenty of the applicants. The following are abstracts of the cases relieved:

1. Widow, aged 63, of M.R.C.S. No income, and supplements slight assistance from children by taking boarders. Relieved twice, £22. Voted £12.

2. Widow, aged 43, of M.R.C.S. Three children, aged 13 to 7, and practically dependent on her earnings by letting lodgings. Relieved three times, £34. Voted £10.

3. M.D.Edin., aged 52. Met with a severe bicycle accident a year ago, and has since been incapacitated and dependent on a widowed sister who can ill afford to help. Voted £12.

4. Widow, aged 56, of L.R.C.P., L.R.C.S.I. Unprovided for at husband's recent death, and hopes to support herself by receiving boarders. Children only able to give very slight help. Voted £10.

5. Daughter, aged 51, of L.R.C.P.I. Has always been in feeble health, and is now incapacitated by a chronic complaint for which she has been promised admission to a hospital. Voted £5 now and £5 on leaving the hospital.

6. Daughter, aged 67, of late M.D.Edin. Used to have a small income, but was obliged to mortgage the property from which it was derived, and now receives nothing owing to foreclosure by the mortgagee. Voted £12.

7. Daughter, aged 65, of late M.R.C.S. Was comfortably provided for by her father, but lost everything through the dishonesty of her trustee, and is now dependent on a small pension from another society. Relieved twice, £36. Voted £12.

8. Daughter, aged 62, of late M.R.C.S. Has had a school for several years, but now, owing to competition, finds it very difficult to meet her expenses, and is obliged to maintain two mentally afflicted sisters. Relieved once, £10. Voted £12.

9. Deserted wife, aged 46. Since husband's disappearance a few years ago has supported herself in different ways, but is now in difficulties, which she quite hopes will be temporary. Relieved once, £10. Voted £10.

10. Widow, aged 70, of M.R.C.S. Since husband's death thirty years ago has kept a lodging-house, but now, owing to failing sight and chronic rheumatism, finds it very difficult to do the necessary work. Only income a few shillings a week from savings which have been invested. Relieved once, £12. Voted £5, and to be advised to apply for an old age pension.

11. Daughters, aged 60 and 55, of late M.R.C.S. Entirely dependent on letting lodgings, and both in feeble health. Relieved eight times, £96. Voted 12.

12. Daughter, aged 66, of late M.R.C.S. Was fairly provided for at father's death, but made most unfortunate investments which now yield only about 5s. a week. Relieved twice, £36. Voted £12.

13. Daughter, aged 44, of late F.R.C.S. No income, and health so indifferent that it is impossible to keep any post even when obtained. Relieved fourteen times, £117. Voted £12.

14. Widow, aged 63, of M.R.C.S. Quite unprovided for at husband's death several years ago, and owing to a deformity has never been able to obtain regular work. Slight help from children. Relieved nine times, £106. Voted £12.

15. Daughter, aged 61, of late M.R.C.S. Has suffered for many years from a chronic complaint, and been obliged to spend her capital both for treatment and maintenance. Relieved twice, £24. Voted £12.

16. Daughter, aged 56, of late M.R.C.S. Health too feeble for anything but light work, and has to help support two sisters, who are unfitted for any occupation. Relieved four times, £72. Voted £18.

17. Widow, aged 64, of M.D.Lond. After husband's death, about ten years ago, started a boarding house at a seaside place but lost all her capital, and is now unable to obtain suitable employment. Relieved twice, £24. Voted £12.

18. Widow, aged 57, of L.R.C.P.Edin. Slight help from children and lets lodgings. Relieved three times, £32. Voted £2 and case to be reconsidered.

19. Widow, aged 44, of M.B., C.M.Glasg. Quite unprovided for at husband's death a year ago, after a long illness, and obliged to endeavour to keep a home together because of her three youngest children, aged 10 to 4; slight help from elder children. Relieved once, £12. Voted £20.

20. Daughter, aged 35, of L.S.A. Has been offered a situation abroad, but requires a little help for unavoidable expenses. Relieved once, £10. Voted £5.

Contributions may be sent to the honorary treasurer, Dr. Samuel West, 15, Wimpole Street. W.

SCIENCE NOTES.

THE large number of investigations that have been made into the etiology of canine distemper and the diversity of organisms found by the different investigators are proof of the fact that until quite recently, at any rate, the real causal agent has not been definitely determined. Apart from the veterinary and economic aspect of distemper, it offers the bacteriologist an opportunity of studying a contagious disease of the respiratory tract. The list of investigators since the time of Pasteur includes the names of many medical men. It is highly probable that the question of the specific organism is on the road to settlement. Dr. J. P. McGowan, in 1910, was the first to describe a particular coccobacillus found in pure culture in the trachea and lungs of dogs which succumbed to typical distemper in the laboratories of the Royal College of Physicians of Edinburgh. The contagion spread to other laboratory animals not usually considered susceptible to the disease. He also obtained the same organism from kennels in various parts of Scotland where distemper was raging. The finding of this organism in pure culture in the trachea of dogs dying of distemper was corroborated by Dr. Leitch, of Dundee. In 1901 Dr. Monckton Copeman had described before the Royal Society a somewhat similar, but not identical, organism. Dr. McGowan claimed to have produced typical distemper by introducing into the nostrils of dogs cultures of his bacillus. Quite independently, Ferry, working in the laboratories of Messrs. Parke, Davis and Co. in Detroit, obtained an organism identical with McGowan's, to which he gave the name *Bacillus bronchicanis*. The scrupulous precautions he took against natural conveyance of the disease to the animals under experiment added greatly to the strength of his conclusions. Two workers in the Department of Experimental Pathology of Cornell University—Torrey and Rahe—have gone into the whole subject very carefully and fully, without preconceived notions or predilection for any particular microbe, and their results, which are given at length in the *Journal of Medical Research* (January, 1913), prove apparently beyond a doubt that the organism described by McGowan is the specific cause of canine distemper.

Goldberger (*Folia Serologica*, 1911), in an investigation on the haemolytic action of various acids and the protective or antihaemolytic properties of different serums in combination with them, found that, in comparison with normal serum, the power of cancer serum to protect red corpuscles against the action of oleic and lactic acids was very high. He tested the serum in various other diseases, such as gastric ulcer, tuberculosis, pneumonia, nephritis, cardiac disease, and exophthalmic goitre, but in none was the antihaemolytic power above that of normal serum. The importance of these observations, and especially the possibilities thereby opened up for serological diagnosis, inevitably led to a critical repetition of the experiments by others. Sweek and Fleischer, as the result of an investigation of the serum of 12 normal and 18 cancer cases, have found that in no case was there marked increase in the inhibitory power of the serum of cancerous patients, and that the method can be of no diagnostic value, as the antihaemolytic property of the serum in normal individuals varies within very wide limits.

The second of the Galton Laboratory Lectures on National Eugenics was delivered at University College, London, on February 18th, when Professor Karl Pearson discussed the heredity of albinism and piebaldism in man. With regard to albinism, he laid stress on the fact that it could not be defined as a definite property. Although the condition, with pink eyes, white hair, and white skin, was perfectly well known, pure albinism was comparatively rare, and in the circumstances it was hardly possible to follow the Mendelians and describe albinism as a unit character. He argued that if the Mendelian theory was to be applied it would be necessary to assume that both parents had latent albinism to account for the offspring being albinos, so that in every instance in which the child of a normal person and an albino exhibited albinism the normal parent must have contained latent albinism, but this was inconsistent with the fact that albinism was very rare in England, only one family in 25,000 being so affected. Consideration of the occurrence of albinism in the coloured races suggested that this phenomenon was a considerable step towards the evolution of a white from a coloured people. It was, he thought, possible that in the course of evolution the white man had been evolved from the coloured, and that if the pedigrees of those present could be traced far enough back a dark-skinned progenitor would eventually be discovered. Professor Pearson went on to observe that the Mendelian regarded piebaldism as distinct from albinism. He cited cases, however, in which piebaldism in certain families had, in the course of generations, developed into albinism. The cases of albinism and piebaldism were too complex to be reduced to any theory of units. The character of piebaldism, for instance, varied from individual to individual and from family to family. He knew of no theory to account for the facts, nor was the time ripe for such a theory. There was a danger in collecting facts in the light of a certain theory, and much of the work of to-day would have to be done over again. The Mendelian school was trying to force the facts into Mendelism, but men, like dogs and mice, still refused to fit into Mendelian categories.

The skull of the new type of fossil man (*Eoanthropus dawsoni*) discovered at Piltdown, in the valley of the Sussex Ouse, an account of which was published in the JOURNAL of December 21st (p. 1719) and December 28th (p. 1763), has been presented to the British Museum by the discoverer, Mr. Charles Dawson, F.S.A., F.G.S., and Mr. G. M. Maryon-Wilson, the owner of the gravel pit where it was found. Mr. Dawson gave a short description of the skull, the associated objects, and the restorations to the meeting of the trustees on February 22nd. The specimens will shortly be placed in the large hall of the Natural History Museum at South Kensington.

British Medical Journal.

SATURDAY, MARCH 1st, 1913.

INSURED PERSONS MAKING THEIR OWN ARRANGEMENTS.

The Memorandum 143/I.C. issued by the Commissioners to assist Insurance Committees in dealing with applications from insured persons who wish to make their own arrangements is printed in the Supplement (page 212), and should be read by every practitioner interested in the working of the Insurance Act. While it makes the intentions of the Commissioners quite clear, it does not appear to settle the vexed questions that have arisen around Section 15 (3) of the Act, questions, indeed, which probably can only be settled by an action in the courts.

The Insurance Act by this Section authorizes an Insurance Committee to allow *any* other persons (that is, other than those excluded by an income limit from participation in the panel arrangements) to make their own arrangements for medical treatment, and, subject to regulations, to contribute from its funds towards the cost of that treatment sums not exceeding in the aggregate the amounts which the Committee would otherwise have expended in providing medical treatment for such persons. By Regulation 14 (7) the Committee may allow *any* insured persons, whether individually or collectively, to make their own arrangements. There is nothing here about "exceptional circumstances," simply a plain statement that an Insurance Committee may if it thinks fit allow *any* insured persons to make their own arrangements. Alarmed by the use which has been made of this proviso by practitioners who do not wish to go on the panel, and by insured persons who prefer to have the services of such practitioners—a much larger number in each case than apparently was ever contemplated by the Commissioners—it has been found convenient to read into the Act ideas which may have been in the minds of the framers, but which we certainly cannot find stated in that document.

The Memorandum states (par. 2) that the Act "does not contemplate" arrangements under Section 15 (3) as an alternative to the normal panel system, but only as a provision to meet the "exceptional cases" for which special arrangements are more suitable than the arrangements made by the Insurance Committee. It is probable that nobody at the time this section was drafted foresaw the possibility of an extensive use being made of it in the way of "contracting out," but we must take the plain words of the Act, and these seem to give an Insurance Committee power to allow any persons it pleases to make their own arrangements. It is very doubtful, to say the least of it, whether the Commissioners have the right to suggest restrictions which will have the effect of practically nullifying a privilege granted to insured persons by Parliament.

The Memorandum contains in its third paragraph a reminder that an Insurance Committee must consider each case on its merits. This is rather an unkind cut, for it is well known that many of the Committees have been rejecting applications in a wholesale manner, and we know of no reason why they should have taken this line except that they had good cause for the belief that such was the wish of the Commissioners. However, we may now expect that each case will receive due consideration, in order to ascertain whether it falls into one of the classes which the Commissioners agree may well be allowed to make their own arrangements—namely, those whose occupation compels them to travel about; those, such as nurses and members of hospital and asylum staffs, who have special advantages in the way of medical treatment, and those who wish to have a particular system of treatment not undertaken by doctors on the panel. The justice and convenience of allowing the two former classes to make their own arrangements is obvious. The last class is probably intended to include Christian Scientists and others with heterodox ideas as to medical treatment.

When we come to the case of those persons who desire to make their own arrangements because they wish to employ some doctor who is not on the panel, one thing is made quite clear—namely, that no arrangement will be allowed, so far as the Commissioners can prevent it, which would give any advantage to the doctor off the panel as compared with the panel doctor. The doctor off the panel must satisfy the Committee that the treatment given by him is equal to that provided by the panel doctor; he must keep and furnish the same records and certificates; he must give if required domiciliary attendance for such of his patients as are recommended for sanatorium benefit; and he must agree to give reasonable facilities in order that the Committee or the Commissioners shall be satisfied that the above conditions are fulfilled. He must also state the quarterly sum he proposes to charge the insured person or the scale of fees on which his charges will be calculated, and if these fees exceed those fixed by the Committee, the insured person will have to pay the excess. If a doctor is prepared to attend any substantial number of insured persons he is told that his proper course is to go on the panel, and in view of the restrictions placed upon him by the present circular, it is difficult to perceive any advantage to be gained by such a practitioner refusing to do so, even if his patients are allowed to make their own arrangements. If he wishes only to take a limited number he may be allowed to go on the panel for that number provided that the doctors on the panel agree to the arrangement. It would appear that the Commissioners are within the four corners of the Act in making these stipulations, which will certainly deter many practitioners from accepting insured persons, as such, as patients. Under Clause 15 (3) the Committee may contribute towards the expenses of those allowed to make their own arrangements, but only subject to the Regulations. Regulation 14 (8) lays on the Committee the duty of satisfying itself that the arrangements made are satisfactory, "that is to say, such as to secure treatment . . . not inferior in nature, quality, or extent to that provided under the arrangements made by the Committee and to comply in other respects with any conditions which by reason of any scheme for the distribution of Parliamentary grant must be complied with in the case of treatment provided otherwise."

As we have said, it is probable that some of the questions involved in the much-discussed Clause 15 (3) will have to be settled by a court of law, but it seems clear, first, that the Insurance Committee, and the Committee alone, can decide whether a person is or is not to be allowed to "make his own arrangements"; secondly, that the Commissioners have no warrant in

the Act or Regulations for laying down elaborate statements as to "exceptional cases"; thirdly, that the intention of the Act would be fulfilled if the Committee allowed all persons who desired it to make their own arrangements so long as it is made clear to them that they could only expect a specified contribution towards their doctors' bills, and would be responsible themselves for the payment of any difference; and, fourthly, that the Commissioners are within their powers in demanding that certain stipulations shall be complied with by those practitioners attending insured persons allowed to make their own arrangements and in respect of whom a contribution is made by the Insurance Committee. On the other hand, the elaborate safe-safeguards to secure that the treatment obtained by those who "contract out" is satisfactory are unnecessary so far as the patient is concerned; he may well be assumed to know whether he is properly treated. If the person chiefly concerned is satisfied, the Insurance Committee need trouble itself no further. If he is not satisfied, he may be relied upon to seek the services of some other doctor, probably this time on the panel, especially as he is liable for any difference between the amount allowed him and his doctor's bill, and cannot in any case make anything out of the transaction.

There is another side to this question which must not be overlooked by the profession. We understand that in Wales bodies of insured persons have already asked to be allowed to make their own arrangements collectively under Clause 15 (3) of the Act with a view of employing one or more whole-time doctors or of obtaining concessions with regard to dependants. Similar action may be taken by other bodies of insured persons. Such attempts to place doctors under a form of lay control to which the strongest objection has always been taken by the profession will be resisted to the utmost. It is not only repugnant to the medical profession, but is against the best interests of the public, who will be far better served by a system of free choice of doctor and the fair competition involved in such a system.

It is evident that the question of the restrictions which should be put on the right to "contract out" is one which needs serious consideration from all points of view.

THE NEW MYSTICISM.

THE headmaster of Eton has recently made known his opinion[1] of an addition to the already numerous methods of spiritual healing with which America, that land of many inventions, has endowed a suffering world. This is the New Mysticism, and its prophet would appear to be a Miss Curtis, of whom we have to confess we have never heard, although there seems something familiar in the doctrine of "the disassimilation of old ideas by the understanding of the purpose of the hypogastric plexus," a structure which appears to have a curious attraction for the modern mystic, and may perhaps have been the real objective of the fakir who spent fifty years in the contemplation of his own navel. We are told that the essence of the teaching is silence, which is supposed to be employed in meditation, and many will start with a certain prejudice in favour of a system which sets out to still the tongue of the valetudinarian and neurasthenic. Mr. Lyttelton tells us that "its votaries can point not only to many lives relieved of terrible bodily ailments, but to many souls uplifted and mental horizons enlarged. . . . It would not," he continues, "be too much to say that its power of healing character is quite as remarkable as that of healing bodily tissues." We are, indeed, quite prepared to believe that it is greater. Mr. Lyttelton appears to have accepted the statements, doubtless made in all good faith on behalf of the New Mysticism, without question, although he is obviously puzzled by a good deal of the teaching, for he says that when "the healing power is sincerely exercised and preached with conviction human beings will put up with the most singular and chaotic exposition of principles that can be imagined." The new doctrine seems to have in it something of Christian Science and something of orthodox Christianity. The theological or philosophical part of the doctrine, to quote Mr. Lyttelton again, appears to seek "to find a new set of phrases in which to designate our relation with the infinite," and he seems to accept the opinion that the subconscious mind, as distinct from self-consciousness, is the source of our true communion with the infinite. This is a favourite doctrine just now with writers of various kinds, from novelists to philosophers, or those who so dub themselves. But is there a tittle of support for it in philosophy? The history of mankind is all the other way.

We gather that the teaching of the New Mysticism as regards healing resembles that of Christian Science, and Mr. Lyttelton anticipates that the same shafts of ridicule and scorn which have often been shot at the elder of the two creeds will be sharpened afresh. "In particular," he writes, "it will be asked if 'these people' think they can mend a broken leg. A large number of critics seem willing to allow that all kinds of spiritual healing of 'nervous disorders' or mental trouble are reasonable and possible. Others, perhaps not so many, are prepared to admit that tissues actually change in quality and to some extent in position, when spiritual influences are brought to bear on them. A few would concede the possibility of a dislocated joint being cured, but, if any claim to heal a broken joint is advanced or even hinted at, the whole movement is suspected of fraud, and the supposition gains ground that nothing happens beyond what is now well recognized as 'suggestion.'" This is the kind of passage that, coming from a man of high education like Mr. Lyttelton, makes us almost despair that sound notions as to the nature of disease and injury can ever be made to penetrate the public mind. No one has ever asked if any one thinks he can mend a broken leg unless it were some one grossly ignorant of the subject. The surgeon does not mend the broken leg; he only puts it in the posture and the conditions which enable nature to mend it in the best position and to the greatest advantage of its future usefulness. If Mr. Lyttelton wishes to see what sort of job nature by her own efforts wrongly persisted in can make of a broken bone, he should pay a visit to the museum of the Seamen's Hospital, where he will see fragments welded together in every conceivable kind of malposition. Nature has done her work quite efficiently so far as the strength of the mend goes, but owing to the want of surgical direction some very undesirable results have been produced. Then, again, it is quaint to think of people who see nothing very wonderful in a dislocation replacing itself, but who are doubtful as to the repair of a broken joint. Here again Mr. Lyttelton, and we may add the New Mystics, might

[1] *Contemporary Review*, January.

be enlightened by the study of a few *x*-ray photographs of dislocated joints. When Mr. Lyttelton tells us that a faith healer who, he says, has undoubtedly performed some very striking cures, has by prayer nearly achieved the adjustment of a badly dislocated hip-joint, the bone being much nearer to being settled in the socket than it was, one can only wonder why a faith that has done so much has failed to reduce the dislocation entirely. A profane person might hint a doubt as to the diagnosis.

Mr. Lyttelton, for whom we have the highest respect, would seem to be imperfectly equipped for the discussion of questions of healing; he makes the assumption that the successful management of a broken bone is a question of mere mechanics, and rather scoffs at theists who ascribe omnipotence to God, and then "confidently and scornfully draw the line limiting His beneficent power to certain phenomena which they think they can safely classify as 'nervous.'" He asks why those who see no difficulty in allowing an action by the Deity—or by suggestion—through the mind on nerves should laugh at the theory that bones may be acted on in similar ways. He takes physicians to task for drawing the line at what they conceive to be nervous complaints as the limit of the power of suggestion. We agree that "it is a question of evidence how far suggestion has been operative in the past"; and it is just this evidence that we have called for again and again from Christian Scientists and other mind healers, and which up to the present we have failed to get. "But who," asks Mr. Lyttelton, "in such a mysterious region can say that suggestion may not be more powerful in the future? All healers," he goes on to say, "postulate a certain condition of receptivity or of co-operative energy of faith in the patient's mind. But supposing that condition is greatly effected by the condition of other minds in the locality or house or family—and what is more probable?—a healer is quite justified in asserting that his success would be far greater if some knowledge of the power of mind over matter were distributed over a wider area." "To the secularist or sceptic, who cannot help admitting the evidence as to suggestion," he says, "it may be urged that the good done by suggestion might be enormously extended if it were not for the cynical refusal of thousands of educated people to credit it with any power whatever except when they are forced to admit the evidence; thus making an atmosphere in which suggestion becomes increasingly inoperative." This, if it means anything, means that these cynical people can by mere negation or doubt counteract the beneficent influence of a force or faculty inherent in the sick person. We seem to have come very near Mrs. Eddy's malicious animal magnetism. It is not desirable that the number of suggestionable people should be largely increased, for suggestion can be applied, and is applied, in many other spheres than medicine, and the number of subjects suitable for its operation would only increase the number of false prophets in politics, religion, commerce, and, in fact, in every department of human life. Miss Curtis, quoted by Mr. Lyttelton, dealing with pain, says: "An essential feature of this way of healing—essential, that is, to its success—is that the healer must hold his imagination as already accomplished. . . . Another way of psychical healing is by denial and affirmation. The condition which has been brought about by unintelligent belief, that is, by habitually receiving the negative interpretation of the senses, has to be denied as untrue to Principle, untrue to the *Substantial* nature of the patient, and the right state of mind, with all its motor consequences for the body, has to be steadily affirmed in its place." Again, Miss Curtis says: "It is best not to deny facts, conditions, and effects in the objective plane. It is waste of time to deny the illness—that can look after itself; deny its root, its subjective and psychical correspondence. Do not deny the headache . . . but get at the mental state which brought about the headache and root that out by affirming the quality of Principle which knows no such thing." This may, perhaps, do for some headaches in neurotic people, but how about a stomach-ache in a child brought about by eating too much Christmas pudding? How are we to get at the mental state which brought this about? and root it out by affirming the quality of Principle which knows no such thing? We are to get at it by the repetition of some word or words, such as Wisdom, Eternal, Love, Truth. If, for instance, we want to give up the habit of afternoon tea, but have not the strength of will to break it at once, we are, while lifting the cup to the lips, to repeat the word Wisdom. Hence we are to learn that if the mind is fixed steadily on "Eternal Principle," the diseased tissues can take care of themselves. This is rather a wide conclusion, and the works of these apostles of new healing cults lead to the conviction that they have never seen real, everyday disease. They have to deal largely with *malades imaginaires*, and their method of treatment may not unjustly be described as cure by the scientific use of the patient's imagination.

The new mysticism seems in Mr. Lyttelton's exposition, with its rhapsodies about the subconscious mind and the hypogastric plexus, to be not only nebulous, as he admits, but grossly materialistic; and while we have, of course, no wish to enter on a discussion of rival creeds, we think a level-headed man would of the two prefer the old-fashioned Christianity, which with its appeal to the higher faculties of mind and spirit, has the qualities of being intelligible to the average man, woman, and child, and fairly adapted to the needs of our poor human life.

STREET PERILS AND AMBULANCE PROVISION.

A BELATED return of the Board of Trade for 1911 shows that the number of accidents in the streets of London is larger than ever, and that the percentage of accidents is increasing in a higher ratio than is the population.

In the last year for which precise figures are available, 20,589 accidents were returned in streets within the City and the area of the Metropolitan Police; 435 terminated fatally. This alarming increase in street accidents in London is attributed to increasing congestion of traffic, and to the indiscriminate mingling of vehicles proceeding at various and varying speeds. The motor omnibus appears to be responsible for more fatalities than the trams, and to the increased use of mechanically propelled vehicles may be largely attributed the enormous rise in the total accidents during recent years. The other day, in a police-court case, the prosecuting counsel, speaking on behalf of the City Commissioner, commented on the large proportion of cases in which those who had been prosecuted for reckless driving had been acquitted by juries, and emphasized the difficulty in which the police were often placed in

their endeavours to protect the public and punish the offenders.

Another aspect of this question, and one to which we have repeatedly directed attention, is that of the lack of adequate provision for dealing promptly with, and with the avoidance of needless suffering to, the victims of these daily accidents in London streets. A jury recently investigated the death of a man in St. Bartholomew's Hospital who had been conveyed from Islington in a wheel-litter, the journey occupying thirty-five minutes. A rider was attached to the verdict urging the London County Council to adopt a more up-to-date ambulance system in the area under its jurisdiction, and similar to that which works so well within the City of London. In the enlightening debate to which this occurrence gave rise in the Council, on February 18th, the apologists for the present state of neglect vouchsafed the information that "before many years were over," and when fresh parliamentary powers had been obtained, and after a conference with the various ambulance agencies in London had taken place, an efficient service might be brought into existence!

The real truth is that the London County Council has for three years, thanks to the Metropolitan Ambulance Acts, 1909, had all the powers necessary for running a service in the County of London similar to, and as efficient as, the City's ambulance service. Indeed, the so-called City scheme was elaborated by the London County Council itself in 1902. The report made to the Council by their General Purposes Committee in November, 1912, was the quintessence of futility and procrastination. It revived a discredited scheme which was propounded before the Home Office Committee in 1907, whereby the one-horse cabs possessed by boards of guardians, together with Asylums Board ambulances, etc., should be utilized for street accidents, without any organizing authority or uniform system. That scheme was admittedly impossible then because, as the Local Government Board had pointed out, it was altogether illegal. Since then Parliament, instead of removing the statutory bar to the adoption of any such scheme, has definitely committed the duty of providing ambulances for street accidents and other casualties in public places to the County Council. The spokesmen of the Government, alike in the Lords and the Commons, regarded it as hopeless and impossible to entrust such municipal powers to the Poor Law authorities.

Our contemporary the *Hospital* has recently published, opportunely but unkindly, the pledges given by county councillors, when elected in 1910, to put in force the powers conferred by the Ambulance Act of 1909. If those pledges had been redeemed, we should have seen the county ambulance service performing its beneficent work to-day as efficiently as the City service. We earnestly plead for the prompt prevention of needless suffering occasioned by the present gravely defective means of transport of the injured.

Liverpool was a pioneer city in making improved arrangements for dealing with street accidents, and in providing rapid ambulances. The influence of its example has been felt on the other side of the Atlantic, where most of the great American cities have highly organized and efficient services, either hospital or municipal; but, as has been said, the London County Council has not far to go for a model, since one exists immediately over its borders—in fact, topographically, in the midst of the area for which it is responsible.

COUNTY COUNCILS AND THE TREATMENT OF TUBERCULOSIS.

At the annual meeting of the County Councils Association on February 25th, Mr. Henry Hobhouse, Chairman of the Insurance Act Committee, asked the meeting to consider whether it could recommend county councils to proceed with the provision of institutes for (1) insured persons, (2) for their dependants, and (3) for the rest of the community requiring institutional treatment. He urged that it would be undesirable for the county councils to surrender so important a branch of health administration to the district councils or the Insurance Committees, and expressed the opinion that a council might, without adding a serious burden to the rates, undertake the institutional treatment of insured persons if the Insurance Committee would transfer the 8d. a head or other residue of the money provided for sanatorium benefit. He recognized that public opinion would almost certainly demand the inclusion of dependants, but thought the question of treating other non-insured persons was less pressing, although their treatment must be contemplated in any scheme which was to have the approval by the Local Government Board, and that Board would probably insist on the necessary number of beds being provided. He concluded by urging that the buildings erected for the purpose should be inexpensive. The subject was fully discussed, and eventually the following resolution was adopted: "That this association recommends the county councils to undertake the duty of providing institutional treatment for insured persons suffering from tuberculosis, and for such of their dependants as the funds of the Insurance Committees by arrangement will allow; but that, inasmuch as the association has not been successful in its efforts to obtain a guarantee of the contribution from the Exchequer towards the annual cost to complete the schemes which was asked for, it is not, as an association, prepared to express any opinion with regard to the establishment of such schemes, and considers that each county council should decide upon its own course of action in the matter."

FUTURE STAGES OF THE TUBERCULOSIS CAMPAIGN.

The Lady Priestley Memorial Lecture, delivered by Professor Metchnikoff in November last, has been translated by Sir Ray Lankester, and published by the National Health Society at the price of a shilling. It may fairly be regarded as the standard account of present knowledge and as the most enlightened indication for future research that is now available for reference. Much has been established, but more remains to be proved, which is yet only in the stage of probability. No point in the whole lecture is more striking than the evidence that is brought forward to show that races of mankind hitherto uninfected are especially susceptible when exposed to the poison, while Europeans, living in the same country and under similar conditions, exhibit little or no tendency to acquire the disease. It must be assumed that they have somehow acquired immunity owing to the unsuspected presence within them of tubercle in some other form. But this lessened susceptibility requires further investigation and study. The apparent immunity conferred by antecedent scrofula has often been noted as a clinical phenomenon, but it has not always been accepted as a factor in prognosis. Many a sufferer from tuberculous glands in the neck has been erroneously regarded as "consumptive," and has been allowed to rest under the ban of an unnecessarily gloomy prognosis. Experiment, so far as it has gone at present, would seem to prove that the organism producing the so-called scrofulous lesion is an attenuated form of the tubercle bacillus, and that many degrees of attenuation may be naturally produced. More light is needed to

distinguish between the virulent and the non-virulent types, the one causing active disease and the other conferring comparative immunity. Is it the bovine form which plays the latter part? The old tradition, still persisting in some country districts, that the air of the cowhouse is good for the consumptive, may have a germ of truth in it. The evidence afforded by the cutaneous reaction devised by von Pirquet tends to prove that a very large proportion of the individuals forming civilized communities are already the hosts of some form of tubercle, and that in very many cases no other indication of its presence is forthcoming during life. Hence the justifiable conclusion that natural vaccination is a factor of vast importance, not only in respect of tuberculosis, but also as against other infectious diseases which are at all times prevalent in the community, but only affect isolated individuals. The further study of the whole subject and its particular application to tuberculosis will doubtless be greatly stimulated, both in the laboratories and in the course of practice, by the indications which Professor Metchnikoff has laid down.

CHEST HOSPITALS AND TUBERCULOSIS SCHEMES.

IT has been announced that the Committee of the Mount Vernon Hospital for Consumption and Diseases of the Chest will recommend the governors, at a meeting to be held on March 12th, to sell the hospital at Hampstead, and to devote the funds to the maintenance and extension of the Northwood Sanatorium. The institution consists of a chest hospital at Hampstead, a sanatorium for consumption at Northwood, Middlesex, and an out-patient department and offices in Fitzroy Square. Soon after the National Insurance Bill was introduced the committee became apprehensive that if passed into law the bill would have the effect of seriously affecting the income of the charity derived from voluntary subscriptions, and that if this anticipation were fulfilled it might become necessary to accept money from the State for the hospital treatment of insured persons, with the inevitable consequence of State control, resulting eventually in the absorption of the hospital by the State. The Committee considered that such a result would be deplorable in respect of the building at Hampstead, and that in respect of the country branch at Northwood it would be directly contrary to the wishes of the donor, who had contributed nearly a quarter of a million for its establishment. A subcommittee reported in November, 1911, that it was unanimously of opinion that the Insurance Act would seriously affect the financial welfare of the hospital. It advised that the future work of the institution lay in the direction of using it for the benefit of patients able to pay 30s. a week for treatment in the sanatorium, and did not consider that it would be possible to retain a free hospital at Hampstead while converting the sanatorium at Northwood into a paying institution. It recommended that the Hampstead property should be sold, and that from the proceeds of this sale and from invested funds the Northwood institution should be enlarged. In this way it was thought that 200 or 250 beds could be maintained, and accommodation provided in the one building for an equal or greater number of patients than are now treated in the two hospitals. The medical staff, in December, 1911, drew up a memorandum giving reasons against this proposal. It pointed out that the Mount Vernon Hospital had been founded fifty years ago for the treatment of persons suffering from all kinds of diseases of the chest, including, in addition to consumption, bronchitis, pleurisy, asthma, and diseases of the heart, and that the establishment at Northwood was a sanatorium designed for early cases of phthisis. They expressed the opinion that it would be impracticable to conduct a chest hospital in the proper sense of the term at Northwood, and that the sale of the Hampstead buildings would almost completely sacrifice the educational value of the hospital, which had been recognized by the University of London as one of the institutions at which candidates for its higher degrees in medicine and surgery might pursue their studies. As an alternative, the medical staff suggested the separation of the two institutions, allowing each to continue under distinct management, Northwood as a sanatorium and Hampstead with the buildings in Fitzroy Square as a chest hospital. Later on the medical staff were informed that the committee of management proposed to ask the governors to approve of such modifications in trusts and by-laws as might be necessary to constitute the establishments at Hampstead and Northwood separate institutions. The medical staff consented to this proposal on certain conditions, the chief of which was that the essential constitution of the Mount Vernon Hospital should remain the same as at present—namely, a hospital for consumption and other diseases of the chest. This plan was approved by the governors at their meeting in March, 1912, and there seems to have been no reason to suppose that it would not be carried into effect until, at a meeting of the committee of management on February 19th, the chairman proposed a resolution to ask the governors at the meeting on March 12th next to instruct the committee of management to sell the Hampstead hospital. At a conference between the medical staff and the committee of management held shortly before this meeting the former had expressed their continued opposition to the sale of the Hampstead hospital. The resolution proposed by the chairman was, however, carried at the committee of management, and it will apparently be submitted to the meeting of governors. The proposal raises certain general questions of importance. As it stands, it would involve the diversion of funds originally provided for a hospital for diseases of the chest of all kinds to the extension and maintenance of a sanatorium for paying patients suffering from consumption. The matter is no doubt complicated by the fact that the State has undertaken to provide treatment, domiciliary, dispensary, and institutional, for insured persons, and proposes to extend the system to the dependants of insured persons, and finally to the whole community. It does not seem probable that the county councils, the bodies to be made financially responsible, will be ready or willing to undertake the treatment of all tuberculous persons unless Parliament makes a special grant, which at present seems improbable. Meanwhile, provision is required for two classes of persons—the poorer uninsured and the middle class of limited means. The policy of restricting the advantages of Northwood sanatorium to persons able to pay 30s. a week is therefore open to criticism. But a more serious objection attaches to the proposal to close the hospital for diseases of the chest at Hampstead. It was not founded for the reception of consumptives alone, and has, we believe, always treated other diseases of the lungs, and also diseases of the heart. Very important additions to our knowledge of the nature and treatment of diseases of the heart have recently been made, some of the most important by members of the staff of the Mount Vernon Hospital. The hospital at Hampstead offers special opportunities for still further advances in methods of diagnosis and treatment, and it may well be hoped that the governors will continue to afford this by maintaining the hospital in its present state of efficiency.

A NEW PHASE OF THE OPIUM QUESTION.

SINCE the commencement of the new year fresh light has come from various sources in regard to the present position of what is known as "the opium question." In a recent debate in the House of Commons it was stated, on behalf of the Government, that a great improvement was taking

place in China in regard to opium smoking and the cultivation of the poppy. The chaos in the outlying provinces which had followed the overthrow of the Manchu dynasty was giving place to energetic suppression of the opium vice by the Republican Government and the uprooting of the poppy. Measures of Draconian severity, ill suited to humanitarian reforms as we conduct them in the West, appear to have been invoked as evidence of the sincerity of the Young China party. Moreover, the Under Secretary for Foreign Affairs stated that "Great Britain was under no obligation to force any definite or indefinite amount of Indian opium into China. The opium trade must have been known by the persons engaged in it to be highly speculative, and they could not expect that this or any other country should secure for them good and profitable bargains." He added, however, that he could make no promise that the Government would release China from her treaty obligations in regard to growing and importing opium. The weak spot in our arrangements with China, made in 1907 and renewed in 1911, is that while we undertake not to send Indian opium into any province which has ceased to produce it, we claim, somewhat paradoxically, that so long as provinces in China continue to grow the poppy themselves so long shall we require them to import opium from India. This policy appears to offend the growing sense of China's autonomy and independence, while the native farmers fail to see why their country should not, at considerable profit to themselves, "support home industries." Again, there has been recently published as a parliamentary paper [Cd. 6605] the "Instructions" which were issued to the British plenipotentiaries at The Hague Opium Conference, held last winter. We now learn that the British Government forbade their delegates to enter into any discussion at the Conference in regard to the arrangements made by His Majesty's Government with China, or as to restudying the treaty obligations regulating the Indo-Chinese opium traffic. It, nevertheless, attached especial importance to the Conference "thoroughly and completely dealing with the restriction of the manufacture, sale, and distribution of morphine and cocaine." We daily read of the spread of the morphine and cocaine habit, and we are glad to see the stress laid upon this aspect of the question, even though it appears from the reports of the Conference that the German Government prevented the articles of the Convention being drawn as strictly as they otherwise might have been in this regard. We cannot help feeling, however, that sooner or later the British Government will have to review their opium agreements with China, and cease to press the obnoxious drug, raised under Government monopoly in India, upon China, whether China grows the poppy herself or not. While this is a matter mainly affecting the two countries concerned there is no reason why the International Convention of 1912 should not be forthwith ratified and put in force. In addition to the twelve Powers which participated in the Conference, eighteen others have since signed the Convention, three have declined to do so, and a few others have not as yet replied. We understand that it is the intention of the Netherlands Government, in accordance with the provisions of the Convention, shortly to invite the Powers which are ready to act to send representatives to The Hague in order that, without further delay, ratification of the Convention and legislation in accordance with its articles may be put in hand, and an international control of opium and the allied drugs be thereby established. In such international action Great Britain would find her hands strengthened and her advice more readily accepted if even at some sacrifice, she could announce to the world that the Indo-Chinese traffic, twice denounced unanimously by the House of Commons to be morally indefensible, were no more.

INTRAMURAL SPREAD OF CANCER OF THE RECTUM.

THERE has been very considerable difference of opinion amongst surgeons regarding the paths of spread of cancer starting in the rectum. The opinions held are not merely academic, since in practice the extent of the operations undertaken for its eradication must be governed by them. It is contended by Harrison Cripps, for example, that the spread in the rectal wall is of no great extent, and that extramural dissemination is a late phenomenon. Sampson Handley made a rather startling contribution to the discussion by demonstrating by means of muci-carmine staining what he considered to be cancer cells in the mucous lymphatics of the rectum for several inches above and below the margins of the malignant growth. So far no adequate support or criticism of these appearances has been brought forward; the observation seemed to be accepted with the reservation that it was a rarity, or the exclusive selection of mucin-secreting cells by muci-carmine was doubted. Miles, in planning his extensive operation for cancer of the rectum, was guided largely by the sites of recurrence following more restricted measures, and, though not definitely disputing the spread of cancer along lymphatics in the rectal wall, laid most stress on its rapid conveyance to the extrarectal glands. The practical outcome is that, in conformity with the ideas of very restricted intramural spread, surgeons of one type remove the growth together with comparatively little free edge on either side of it, and content themselves with a restoration of the bowel by end-to-end anastomosis wherever possible; another type, impressed with the idea of extensive intramural dissemination, would remove a considerable portion of bowel; whilst the third type, in accordance with the observations on rapid extramural involvement, will remove the tissues containing the lymphatic glands and vessels as the primary danger zones—an operative procedure that entails removing also that part of the bowel with which these lymphatic glands and tracts are in intimate relation. In order to get at the real facts of the case too much dependence must not be placed on opinions derived from clinical observations merely nor on *post-mortem* material where the picture is blurred by the advanced changes and the secondary inflammatory processes that ensue thereon. It is only in the case of fairly early conditions, where a large amount of bowel with its surroundings has been removed, that the pathologist can trace the spread of the disease. Mr. Percival Cole has been fortunate in such material. In his paper on intramural spread of rectal carcinoma, published at page 431, he has confined himself to one part of the problem; but we may surmise that the same material can to some extent yield further information regarding extramural dissemination, which he regards as being of greater importance. He concludes, after a thorough histological examination of twenty cases, that the mucous and submucous spread of rectal cancer is very restricted and need not be seriously considered from a practical point of view. The cancer cells spread by the lymphatic vessels radially through the circular muscular coat to deeper plexuses, where they may travel for some distance beyond the superficial extent of the growth. Conveyance of cells in the rectal wall is more extensive in these deep plexuses than in the submucous coat. In one case of colloid cancer with extensive intramural dissemination he was able to demonstrate the fact that the submucous coat was involved secondarily by upgrowths of cells from the deep plexus by way of the radial intramuscular channels. This observation throws doubt on the continuity of the channels of the submucous plexus, and it may quite well be that this plexus is merely the interlacing arborescence of the radial offshoots from the deep plexus. No support is given to Handley's theory of mucous and submucous permeation, and it is thought

improbable that the discrete, well-formed cells which that keen observer described—cells which have no histological resemblance to the columnar cells of the rectal epithelium—were disseminated cancer cells. Mr. Cole's conclusion is that intramural spread is of comparatively little clinical importance, and that the finding of post-operative recurrences apparently in the bowel wall is explicable by contact transference or retrograde infiltration of the bowel wall from extramural involvement.

THE STERILIZATION OF DRINKING WATER BY ULTRA-VIOLET RADIATION.

IT is generally known that ultra-violet radiation has bactericidal properties, and already it is being applied industrially to the sterilization of urban drinking supplies. Since it was brought forward in its experimental stage at the Competitive Exhibition of Sterilizing Apparatus held at Marseilles in 1910, the system has been adopted by some French towns and has been introduced into India. The results up to date were given by M. de Recklinghausen at a recent meeting of the Société de Medécine Publique et de Génie Sanitaire.[1] In one important respect the procedure has been modified since the first experiments. Formerly the quartz mercury-vapour lamp, which is the source of the ultra-violet radiation, was completely immersed in the water. Such a method may seem very simple and efficacious, but it has been found that the chilling effect of immersion in running water makes it impossible to maintain the very high temperature necessary if the lamp is to emit a large proportion of ultra-violet radiation. In recent installations the lamp has been placed in close proximity to the water, but is allowed to burn entirely in air; it is stated that a lamp working at 660 watts, burning in air, emits almost ten times as much ultra-violet radiation as a lamp of even slightly greater energy immersed in water. Apparatus has been constructed, therefore, which provides that the water, while passing as close as possible to the lamp, shall be separated from it by an air-space. Another necessary condition is that the water, in the course of its passage round the lamp, shall be violently agitated by means of bafflers, so that the bactericidal radiations may be more effective. It is on these principles that the first apparatus of large capacity has been constructed and installed at Marseilles, in series with the Puech and Chabal system of roughing filters and prefilters. One form or other of previous filtration, preferably something simple and rapid, is evidently necessary, especially in dealing with the water of rivers, if the best results are to be obtained; it does not greatly reduce the microbian contents of the water, but it gets rid of suspended matter. If this be not done, the bactericidal radiations cannot penetrate properly, for the unfiltered particles form a kind of screen, and under this cover whole colonies of micro-organisms may escape. Another urban installation, capable of sterilizing 500 cubic metres (110,000 gallons) in twenty-four hours, has been at work for the past two years at Maromme-les-Rouen, and bacteriological examinations have shown the constancy of its action, even after the lamps have been burning for several thousands of hours. Some of the water at Maromme is bottled, and in spite of this extra risk of contamination its sterility has been maintained. Another waterworks on this principle has been constructed at Isle-sur-Sorgues, near Avignon, and an installation of 600 cubic metres capacity has been set up in India. A similar but quite small apparatus for hospital and domestic use is also described by de Recklinghausen. This is constructed to sterilize 600 litres (more than 130 gallons) an hour, providing that the water has previously been freed from matter in suspension. No description of this apparatus is given, but from a diagram reproduced with the paper it appears that the prefiltered water is admitted by an automatic valve carried to the sterilizing apparatus, and made to circulate on three sides of the lamp casing. It is then sent into the reservoir as sterilized drinking supply. One apparatus of this kind, sent out to a regiment in Africa, is reported to be working satisfactorily. In the case of water which is strongly coloured a more powerful sterilizing installation is necessary. De Recklinghausen states that he and his colleagues have constructed for this purpose special lamps of 3 ampères 500 volts, and that with these the output of ultra-violet is greatly increased. They have also made an apparatus with two of these lamps as a single unit. Together their consumption is 3 kilowatts, and the luminous capacity of the tubes of mercury vapour, which are placed end to end, is about 16,000 candles. The ultra-violet radiation with these 500-volt lamps is estimated to be eleven times greater than that obtainable with the 220-volt lamps hitherto used, although the former necessitate only about double the electrical expenditure. This two-power apparatus, with a capacity to sterilize from 1,600 to 2,000 cubic metres a day, has been used for the water of rivers which, though already filtered, was markedly yellow in colour. Before the passage through the apparatus the microbian content of the water averaged something like 200 bacteria per cubic centimetre; this was reduced to 2.5 after irradiation. The colon bacillus, which was frequently found in the water before its subjection to the sterilizing agent, was eliminated altogether. There remains the question of the cost of sterilization. M. Louis Marmier,[2] in a paper which is chiefly concerned with the engineering side of the alternative and older system of sterilization by ozone, has compared the two procedures in this respect. According to his figures, the total consumption of electrical energy in the sterilization of 1,000 cubic metres (220,000 gallons) per hour by the ultra-violet method is 69 kilowatt hours, a kilowatt hour being the Board of Trade unit. This includes the energy required for prefiltration and for regulating the water supply, and is based upon experiments with lamps which were not immersed in the water. In order to obtain the same result with immersed lamps, more than 200 kilowatt hours would be necessary. To these figures has to be added the cost of replacing the lamps, for it has been stated that some lamps have lost their bactericidal properties in less than 2,000 hours. This is probably an over-estimate, and later experiments appear to show that the lamps will last very much longer than this before requiring renewal—perhaps five times as long. The other method, that of sterilization by ozone, involves a somewhat large expenditure on plant, and M. Marmier's figures, worked out for several ozone-sterilizing systems, show the cost to be generally greater than that of the mercury-vapour lamp. With the ozone method, also, the water requires some form of preliminary purification, if not the more or less thorough filtration which is necessary in the other case. There are, however, fewer supplementary expenses with ozone, and, taking this into account, the ultimate difference in cost may not be considerable. This is an advantage, as it clears the way for tests based solely on comparative efficiency. Ozone, which for sterilizing purposes is used in concentrations of at least one gram per cubic metre of air, has the drawback of imparting a disagreeable taste, which disappears only after the water has been standing for some time.

[1] *Revue d'Hygiène*, December, 1912.

SPIROCHAETES IN THE BRAIN IN GENERAL PARALYSIS.

A PAPER published in the *Journal of Experimental Medicine* (February, 1913) makes the striking announcement that Dr. H. Noguchi has succeeded in demonstrating the *Treponema (spirochaeta) pallidum* in the brain of 12 out of 70 cases of general paralysis observed in the

[2] Ibid., January, 1913.

pathological department of the Central Islip State Hospital, New York. His results have been confirmed by Dr. J. W. Moore, who is associated with him in the composition of the paper, as well as by Dr. Flexner, the Director of the Rockefeller Institute for Medical Research, where the microscopical investigations have been carried on. It is proposed to continue the inquiry, in order to ascertain whether by an improved technique *T. pallidum* may not be demonstrated in a higher percentage of cases. Noguchi and Moore point out that Ranke and others have demonstrated the spirochaete in the pia and sheaths of the vessels in the brain in congenital syphilis, and that Dunlap, working in the New York State Psychiatric Institute, had shown the organism in a case of cerebral syphilis. Noguchi and Moore state that in the 12 cases in which they found the organism in the brain the *post-mortem* appearances were definitely those of general paralysis. Ten of the patients were men and 2 were women; 7 were of the cerebral type, and 5 of the tabetic. In 7 cases the date of onset could be satisfactorily ascertained; the longest duration of life was thirty months, and the shortest five months; the average was seventeen months. The majority were therefore much below the average duration, which has been estimated by various authors as from twenty-four to thirty-two months. The ages of the patients varied from 33 to 60 years, the average being 44. The authors consider the question whether their cases may not have been cerebral syphilis in the narrower sense. In reply to this they state that the clinical course showed a diffuse progressive deterioration which agreed with the diagnosis of general paralysis, and that there were no cranial symptoms or other focal manifestations. They consider that the diagnosis must finally depend upon the *post-mortem* appearances, which they hold to be conclusive. The specimens in most of the cases were taken from the first right frontal gyrus, in some from the left hemisphere or gyrus rectus, and were stained by the Levaditi silver method modified to produce an elective stain for *T. pallidum*. The spirochaetes were found in all layers of the cortex with the exception of the outer, or neuroglia layer. A few were found subcortically; none were found in the pia. In all instances they seemed to have wandered into the nerve tissue; they were not found in the sheaths of the vessels, and seldom in close proximity to the larger vessels. There seemed to be no ratio between the number of spirochaetes and the severity of the paresis, though in the case in which they were most numerous the paretic changes were very marked. The relatively short duration of the disease in the cases in which the organism was found leads them to suggest that it may be easier to find it in those which run a fairly rapid course.

THE INDIA OFFICE MEDICAL BOARD.

SIR ARTHUR BRANFOOT, K.C.I.E., President of the India Office Medical Board, hands over charge of that office to the second member, Sir Richard Havelock Charles, G.C.V.O., on February 28th. Lieutenant-Colonel John Anderson, C.I.E., late Civil Surgeon of Lucknow, joins the Board as junior member. In its present form this Board has existed for nearly half a century, but in a somewhat different shape for nearly a century longer. In 1773 the Court of Directors appointed a board in London to examine candidates for their service. The names of the members do not seem to have survived. The *Gentleman's Magazine* for July, 1793, records the death in London, at the age of 77, of George Marten, of Limehouse, for many years examining surgeon of the East India Company. Drs. Lorimer and Hunter were appointed in his place. Dr. Lorimer seems to have died soon afterwards. John Hunter served alone till his death on January 29th, 1809. Though completely overshadowed by his much greater contemporary and namesake, Hunter was a man of some note in his day. In early life (1781–3) he had served in the Army Medical Department in the West Indies. Hunter's successor was William Dick, who had served in the Bengal Medical Service from 1781 to 1802, most of that time as Superintendent and owner of the Calcutta Lunatic Asylum. Dick resigned in 1818, and died in Scotland on January 16th, 1821. In 1815 William Frederick Chambers was appointed Assistant to Dick, and succeeded him in 1818. Chambers was Physician to St. George's Hospital. He resigned in 1835, under the pressure of excess of work, as one of the leading consulting physicians in London. In 1836 he was appointed Physician-in-Ordinary to the King, William IV; he was appointed in the same capacity to Queen Victoria on her accession in 1837, and in the same year received the Knighthood of Hanover. He died at Lymington, aged 69, on December 17th, 1855. Chambers was succeeded by another ex-army medical officer, John Robert Hume, who had served in the Peninsula, and settled in practice in London after peace was declared in 1815. He was Physician to the Duke of Wellington, and a Commissioner in Lunacy. He resigned in 1845, and died in London on March 1st, 1857. On Hume's retirement two of the most distinguished officers on the retired list of the I.M.S., Sir James Annesley and Dr. (afterwards Sir) James Ranald Martin, were candidates for the appointment. The Chairman of the Court, by a small majority, carried the appointment of Dr. John Scott, his own medical attendant, a medical man practising at Barnes, who had served in early life as surgeon of the Indiaman *Farquharson*. Scott saw out the company; he held office till his death, from angina, on January 18th, 1859. On Scott's death Sir James Ranald Martin was appointed "Physician to the Secretary of State for India in Council." The Medical Board was established on October 31st, 1864, Martin being given the rank of Inspector-General as its President. He resigned on November 17th, 1874, and died ten days later. Martin was succeeded by Sir Joseph Fayrer, who had been junior member of the Board for the two preceding years. Fayrer held office for just twenty years, vacating on January 12th, 1895. Sir William Hooper succeeded Fayrer, and was in turn succeeded towards the end of 1903 by Sir Arthur Branfoot. The Board, as constituted in 1864, consisted of three members, the third being an officer of the A.M.D. This third member was dropped in 1873. The place of second member was usually filled by an I.M.S. officer on furlough, up to about 1889, since that time by one on the retired list. Many of the most distinguished officers of the I.M.S. have, from time to time, filled the post of second member. The first was J. W. Mudge (1864–6); others are W. Thom, S. B. Partridge, J. Ewart, H. Cayley, K. McLeod, E. F. Drake-Brockman, A. Crombie, and A. J. Willcocks. The A.M.D. officers who successively acted as third member were D. R. Mackinnon, W. K. Swettenham, and T. G. FitzGerald.

THE Paris Academy of Medicine, at a recent meeting, elected Dr. A. Carrel, of the Rockefeller Institute for Medical Research in New York, formerly of Lyons, and M. Arnozan, Professor of Clinical Medicine, to be corresponding members.

THE Morison Lectures before the Royal College of Physicians of Edinburgh will be given by Dr. G. M. Robertson, physician-superintendent of the Royal Asylum, Morningside, and lecturer on mental diseases in the University of Edinburgh, on March 10th, 12th, and 14th at 5 p.m. on each day. The lectures will discuss recent observations relating to general paralysis of the insane. The first lecture will deal with the new reactions and signs, the second with early diagnosis, and the third with etiology, prophylaxis, and treatment.

Scotland.

[FROM OUR SPECIAL CORRESPONDENTS.]

ROYAL EDINBURGH ASYLUM.

The Hundredth Annual Report.

The hundredth annual report (that for the year 1912) was read by Dr. George M. Robertson, the Physician Superintendent, at the statutory annual meeting on February 24th, 1913, when the Right Hon. the Lord Provost was in the chair.

General Statistics.

On January 1st there were 753 patients on the register, on December 31st the number was 784. The total number of inmates had been stationary for the previous four years, and as low as 743 at the end of the year 1907. The admissions in 1912 numbered 222, the discharges 129, and the deaths 62. The admissions were 43 more than in the previous year. Both Craig House and the West House shared in this increase, and the number of admissions to the former has only once been exceeded during the last ten years.

Melancholia.

Of the forms of insanity admitted, melancholia, as usual, was the most prevalent, and accounted for a quarter of the admissions. Its symptoms resembled and were a caricature of those of natural anxiety or despondency, the direct result of depressing causes, such as loss of friends or reverses of fortune. It differed from natural melancholy in not being a reaction to any external cause affecting the feelings, but the result of internal disorder of the brain. Mania and melancholia—or morbid elation and depression—were alternative manifestations of the same disease process, and were often associated.

Alcoholic Insanity.

Among the exciting causes of insanity, alcoholic excess, as in former years, headed the list, but the proportion of alcoholic insanity was less than usual, being only 11.2 per cent. of the total. During 1908, 1909, and 1910 the proportion of alcoholic insanity among women appeared to be steadily increasing. During the last two years the figures showed a decrease, but as the major amount of this insanity was preventable the doctrine of temperance still required to be preached.

General Paralysis.

The number of patients admitted with general paralysis of the insane was 24, of whom only one was a woman; the diagnosis in every case was confirmed by the Wassermann reaction and the other laboratory tests. As there were 107 admissions of men, 21.5 per cent., or over 1 in 5, of the male cases suffered from this disease. The average admission-rate for the last five years was over 19 per cent., as compared with 16.4 per cent. for the whole of England, and it must be remembered that nearly a third of the cases were not sent to institutions. A great deal of attention was directed annually to alcoholic insanity, which amounted to only 17.6 per cent. of the admissions, and was therefore less frequent in the male sex in the district than was general paralysis. While alcoholic insanity was usually recovered from on the removal of the cause, the cure of general paralysis had baffled all efforts, and the disease was fatal in two or three years' time. Of the 31 men who died during 1912 the cause in 14, or 45 per cent., was general paralysis; the average rate for the last five years was 40 per cent. Dr. Robertson concluded this part of his report with the following observations:

> These statistics reveal a state of affairs that calls urgently for public attention, and only because the subject has certain aspects that require delicate handling has reference to it been avoided in the past. I, however, feel it a duty incumbent on me to do so now, not only from my position, which enables me to see the extent of the evil, but also because the incidence of this disease in this area is probably not exceeded elsewhere in Scotland. It is also a disease which there is good reason for believing is now within the power of medical science to avert, if it is not able to cure it. Large numbers of soldiers used in the past to fall victims to it, but medical treatment in the army has become so thorough and scientific that, after twelve or fifteen years, this profession will probably cease to supply its proportion of cases. Can something of the same kind not be done for men in the civil population? They would no doubt require to be educated to a sense of their dangers, and the value of early treatment, by short addresses or printed warnings in their workships. The insurance or some other public authority would require to make provision for treatment, which would not be difficult or expensive owing to the short time now required, and the medical profession should be given the power of exercising more pressure than at present for insisting upon treatment till a cure be obtained. If these measures were successful, in fifteen years not only general paralysis, but a host of serious maladies, would decrease enormously in number. The old policy of merely ignoring the existence of these ills is now inexcusable and something must be done.

Discharges.

Fifty-eight patients were discharged as recovered and 71 as unrecovered. The recovery-rate during 1912 was 26 per cent. of the total number of admissions. The lowness of the rate was partly accounted for by the large number of senile cases, no fewer than 18 being over 70 years of age. The average age of the admissions during the last four years was 43 years, whereas in 1912 it rose to 45.

Deaths.

The total number of deaths was 62 (8.2 per cent. of the average number resident). This was the lowest death-rate recorded for over twenty years with the exception of 1910; the general health of the population has been very satisfactory. Sixteen of the deaths were due to general paralysis, and 16 were of persons over 70 years of age; these two groups thus accounted for 32 out of a total of 62 deaths. Among the deaths were those of two nonagenarians who had both been many years in the institution.

Tuberculosis.

There were only 6 deaths (5 women) due to pulmonary phthisis; 3 of the cases were diagnosed on admission and 1 died within a fortnight. Of the other 3, 1 was known to have been affected for five years; a second was probably infected by her father, and the third was a female drunkard; alcoholism, by lowering the bodily health and weakening the powers of defence, was an important factor in the development of phthisis. The statistics showed a very satisfactory state of affairs as regards this disease, which was so prevalent at one time.

Artificial or Tube Feeding.

Under this head, Dr. Robertson's report contained the following passages:

> *New Attitude of Public.*
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> It is a new experience for us to find the proper treatment of our patients hampered by political questions, as we do now, with regard to the artificial feeding of patients who refuse their food. During the course of the last eighteen months I have on several occasions found the friends of patients, as a result of what had appeared in the press on the subject, manifestly offering resistance to this most necessary and humane procedure, and they have had to be won over by persuasion and argument. I have met relatives prepared to allow the patient to starve, and probably die, rather than to be fed, although this feeding might not be necessary for a few days. I have known of cases where the patients were not fed, and have died.
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> *Asylum Physicians Perplexed and Astonished.*
>
> It has been a source of perplexity and astonishment to all engaged in the treatment of the insane to learn that artificial feeding by means of a tube should be regarded as torture or dangerous. It is true it is unpleasant, and causes a tendency to retch, with transient sensations of choking, and on the first two or three occasions it may be accompanied by feelings of alarm, but it is certainly not painful in the ordinary sense. With regard to danger, it cannot be said to be entirely free from it, but neither can, for that matter, the everyday act of swallowing food in the weak. If the operation is done with the exercise of ordinary care and skill upon a person not suffering from an alarming degree of weakness, there is no practical danger. I have probably performed the operation, as

an assistant medical officer chiefly, over 2,000 times, and I have never seen evil results in any of these cases, but the reverse. Patients have been fed in mental hospitals in this way for years at a time without ill health, but special attention has to be paid to the ingredients of the food in these prolonged cases. It must include, beside the staple articles of milk and eggs, the juice of vegetables and of fruit such as oranges, and it is usual, too, to add, if desirable, stimulants and medicines.

Why do Suffragettes Suffer?

During 1912 more than a fourth (66 out of 240) of the suffrage prisoners in England were liberated for reasons of ill health, which, with few exceptions, was due, wholly or in part, to their refusal to take food. I concluded at one time that the process of artificial feeding must have been resorted to in these cases much too late, when the strength had already failed from want of nourishment, for I find this is the mistake the inexperienced most commonly fall into in treating the insane, and I warn my students of this danger.

Is Feeding Adopted Too Late?

We are all more inclined to defer feeding too long than to begin too soon, but it is safer to err the other way. I now understand that what differentiates "the hunger-striker" from the insane person who refuses food, and is an important factor in the injury to health she occasionally sustains, is the purposeful and violent way she resists and struggles until utterly exhausted. After she is fed, she voluntarily ejects the meal. The patient, on the other hand, is frequently confused and even apathetic, and may be a mere passive resister, or else is intelligent enough to realize that whatever he may do, he will be fed in the end. He is also aware that no unnecessary inconvenience or indignity will be offered to him in the process to which he quickly becomes accustomed. It is probably not so much the feeding as the struggling that injures "the hunger-striker," and if she struggled to the same extent on an empty stomach in having her face washed, or her clothes put on, the consequences might be similar.

Persuasion and Tact.

No patient is ever fed without being first offered his food in the ordinary way, and until every form of persuasion has been tried in vain. He is sometimes left alone in a room with his food, or it is offered to him by some one he is friendly with, or he is coaxed by a member of the opposite sex. Lately one of our intelligent patients as a protest actually went on hunger strike in the most approved manner. As he was in good health he was allowed to starve himself for a couple of days, then the nurse of the ward arranged with the attendant, under whose constant personal supervision he was, to turn his back on him for a moment. She induced another patient to seize this opportunity of slipping a slice of bread, as if surreptitiously, under the bed-clothes of the hunger-striker. This pantomime was repeated daily, and he sustained himself on this simple menu for several days longer, till it dawned upon him, from the indifference of the officials, that they knew more about his secret supplies than he had imagined. Realizing at length that he had been circumvented, he began to eat his meals. A gentleman at Craig House last December, obeying the commands of imaginary voices, also refused his food, and had to be fed for nearly a week. On the morning of the 25th he was still obdurate; but at dinner time a slice of roast turkey, a glass of champagne, and the sight of every one else enjoying Christmas fare, supplied just the stimulus that was needed, and he himself set to with right good will, and he has continued to take his food ever since. Human nature is much the same in a mental hospital as out of it, and he who understands it best makes the most successful physician or nurse. It is hoped that these simple statements and illustrations will enable all reasonable people to see in its true light what I have already called a most necessary and a humane procedure under certain conditions, and how we meet difficulties as they arise.

PELLAGRA.

Dr. Robertson related the following case, which he said did not actually take place last year, but reflected credit on the accuracy of the medical work:

A young woman from Shetland was admitted to the West House, suffering from delusions and indefinite bodily symptoms, which were suggestive of general paralysis of the insane. Because of the incomplete picture she presented of this disease, the case was very minutely studied in every way, but its exact nature remained an unsolved problem. In this state of doubt we invited a specialist in skin diseases to report upon the symmetrical brownish-red inflammation of the back of the hands and face resembling sunburn that she suffered from. Dr. Low had the good fortune to have previously seen some casts illustrating pellagra, and he was of opinion that the eruption on this woman's hands resembled it. All the other symptoms were confirmatory of this opinion, and on reviewing the case in the light of this suggestion there was no doubt whatever that it was a typical one of pellagrous insanity, from which the patient died.

This case was the only example of undoubted pellagra then known to have occurred in this country during a period of forty-five years. Only one other undoubted case had been reported; this was described in 1866 by the late Dr. Howden, of the Montrose Royal Asylum. Since, however, Dr. Dods Brown and Dr. Cranston Low published a record of this case and attracted attention to the disease, other cases had been found.

THE CENTENARY OF THE OPENING.

The institution was opened for the reception of patients on July 9th, 1813. The proposal for its establishment was originally made twenty-one years previously by the President of the Royal College of Physicians, and its object was to provide for the care by members of the Royal Colleges of Physicians and Surgeons of insane persons who were still in a recoverable state. The rich were to be charged, and the poor were to be maintained gratuitously. The Lord Provost of the city and others holding high official positions agreed, at the suggestion of the Royal College of Physicians, to form themselves into a body of trustees to carry this scheme into operation, and regulations for the management of the institution were subsequently adopted after they had been submitted to every member of the College of Physicians and Surgeons for suggestions. The institution was thus launched under the most favourable auspices, both medical and lay, and from the beginning it aimed at being national in character.

THE MEDICAL STAFF.

The University of Edinburgh last year created a Diploma of Psychiatry open to graduates, and facilities were therefore given to the assistant physicians in the institution to attend the necessary courses of instruction; Dr. Dods Brown was one of the first to obtain this diploma, the possession of which Dr. Robertson expected would in course of time be essential for all applicants for the medical posts. In connexion with this diploma a post-graduate clinical lecture was given every Thursday forenoon at the West House. This was conducted by Dr. Robertson with the assistance of the medical officers, Dr. Donald Ross and Dr. Maxwell Ross. The well-equipped laboratory also, under the immediate charge of Dr. Muirhead, was a stimulus to scientific study, as well as of great practical assistance in the clinical examinations and treatment of patients. In addition to this routine clinical work, original researches were carried on. One of these, done conjointly by Dr. Henderson and Dr. Muirhead, on the different forms of cells found in the cerebro spinal fluid in disease, would have obtained on its merits the bronze medal granted by the Medico-Psychological Association but for a technicality.

Dr. D. K. Henderson resigned his appointment here on being appointed chief of the Psychiatric Clinic (Phipps Institute) of Johns Hopkins Hospital, Baltimore, and was succeeded by Dr. Maxwell Ross, who had just served a term as Resident Physician in that hospital and in the Royal Edinburgh Infirmary.

Various points connected with the nursing staff were referred to—the Insurance Act, one day of rest in seven, the training of nurses, the hospital features of the Scottish asylums, and certain pension anomalies in Scotland.

DINNER OF THE ROYAL MEDICAL SOCIETY.

The annual dinner of the Royal Medical Society of Edinburgh took place on February 11th, in the hall of the society in Melbourne Place. The guest of the evening was Mr. W. Arbuthnot Lane, F.R.C.S., of London, and there was a distinguished company, including the

Moderator of the General Assembly of the Church of Scotland, the President of the Royal College of Surgeons, the Master of the Merchant Company, the President of the Royal College of Physicians, the Deans of the Faculties of Divinity, Arts, and Law, the superintendent of the Royal Infirmary, and the President of the Royal Faculty of Physicians and Surgeons of Glasgow. The Senior President of the Society (Dr. Murray Lyon) was in the chair, and in proposing the health of "The Guest" spoke of Mr. Arbuthnot Lane's many and varied contributions to literature. Mr. Lane replied, and in proposing "The Royal Medical Society," said that the society was as good as it was old; he then touched upon medical education, saying that no men got a better medical education than they in Great Britain, but they must not stop there, they must go on. He had been visiting America, and he thought the Americans were leaving us behind, simply because they put their money into what they called travel, and went and saw the best men operate and practise.

Indian Medical Service Dinner.

We are requested to intimate that the Edinburgh Indian Medical Service dinner will be held in the United Service Club there on Friday, May 30th. Sir Alexander Christison, Bart., will preside. Any further information can be obtained from Colonel James Arnott, I.M.S. (ret.), 8, Rothesay Place, Edinburgh.

Edinburgh New Town Dispensary.

At the annual meeting of the managers and subscribers of the New Town Dispensary—the N.T.D. as it has been called for many years—which was held on February 19th, it was shown that there was an increase in the number of patients over the number in previous years, and that the subscriptions had been rather smaller. Sympathetic reference was made to the death of Dr. George A. Gibson, who had been consulting physician for the past two years. In reply to a question as to the effect of the Insurance Act upon the attendance of patients, it was stated that in the first month there had been a diminution in the ordinary attendances of about 30 per cent., whilst the applications for attendance at confinement had increased in about the same proportion.

Hygiene of the Abattoir.

The hygiene of the abattoir is not yet all that it might be, and it is admitted that the methods of slaughtering are far from perfect. The poleaxe, for instance, in the hands of a weak or nervous person may be the cause of much needless suffering. There was therefore a good deal of interest taken in the demonstration given at the Gorgie abattoir on February 20th, when the Royal Society for the Prevention of Cruelty to Animals invited members of the Town Council of Edinburgh and of the Meat Trade Association to witness the use of the compressed-air killer and the captive bolt pistol in slaughtering. The experiments were made on oxen, sheep, and pigs; and, whilst the new means of killing the animals were at any rate as speedy as the knife in the case of the sheep and pigs, they could hardly (from the tests made) be regarded as so satisfactory as the poleaxe in the case of the bullocks; in fact, in two out of four bullocks experimented upon the poleaxe was needed to kill after the animals had been shot.

Ireland.

[FROM OUR SPECIAL CORRESPONDENTS.]

Prevention of Infantile Mortality.

The report presented to the annual meeting of the Dublin Committee for the Prevention of Infantile Mortality stated that 200 ladies were working as voluntary health-visitors, under the auspices of the committee, and that during the year 22,500 visits had been paid by those visitors to mothers and their children. As there were no paid officials, all the money subscribed was spent on the poor. The Chairman said that the majority of the lady members of the society did not belong to what was known as the leisured class. They were workers who had only a few leisure hours in the evening, which they might justly claim for themselves, but which they gave up to save the lives of children.

Treatment of Tuberculosis.

At a special meeting of the Sligo County Council it was decided to adopt Part I of the sanatorium benefits under the Insurance Act, and to appoint a tuberculosis officer at a salary of £450 a year, with an additional allowance of £50 a year travelling expenses. Several members were against taking advantage of the beds offered by the Women's National Health Association, and it was decided to postpone further consideration of this part of the scheme, the secretary being instructed to obtain particulars from the Galway County Council as to the beds available under their scheme.

At a special meeting of the Queen's County County Council a letter was received from the Local Government Board approving of the site of the late sanatorium, which was burnt, in the grounds of the Queen's County Infirmary, as the site for a new sanatorium to be erected for the treatment of tuberculosis in the county, provided the council proceeded without delay to appoint an architect and instruct him to prepare plans and specifications for a tuberculosis dispensary and sanatorium suitable for the requirements of the county.

South Charitable Infirmary and County Hospital, Cork.

The annual report of the South Infirmary states that 594 patients were treated in the medical wards during the year 1912, being 16 more than in the year 1911. A large number of these cases were of a very serious character, and hence entailed considerable care and responsibility in both the medical and nursing staffs. Into the surgical wards 769 cases were admitted, being an increase of 82 over 1911. The majority of these being serious cases of surgical disease or accident, necessitated the large number of 423 major operations, an increase of nearly 100 operations over the previous year. The daily average of intern patients was 83.9, being an increase of 3.7 on the previous year. In the extern departments there were 3,759 cases (an increase of 78), and a total number of attendances of 14,186. The new extern medical department, it is considered, has been of great service to the hospital. The dental department has steadily increased in its usefulness, and further developments are looked forward to in that department. Reference was made in the Treasurer's report to the arrangements to be made for the reception of patients under the Insurance Act. The City and County Insurance Committees had applied for terms for the treatment of surgical tuberculous cases, and it had been decided to fix the rate weekly at 17s. 6d. a patient, including maintenance and surgical treatment, but this has not been acted upon yet, owing to the desire of the Cork Medical Committee to deal directly with the Insurance Commissioners. Pending a settlement of terms, patients are receiving the surgical benefit of the infirmary as heretofore.

A Housing Scheme.

The Council of the Urban District of Pembroke, near Dublin, has applied for a loan of £66,950, under the Housing of the Working Classes Acts, for the purpose of erecting working-class lodging-houses. At an inquiry now being held into the matter by the Local Government Board, Dr. Denham, who up to last year was M.O.H. for the district, said in his evidence that he had condemned 220 houses, and that many of these were over 200 years old and very insanitary. Another witness stated that 22 persons were occupying a four-roomed house, and another corner house accommodated 38 persons. Seven, eight, nine, and even ten families occupied houses with small, low, dirty rooms, unfit for more than two or three people. Dr. Cremen, the present M.O.H., stated that some houses were most insanitary, and consumption as a consequence was prevalent. In one house there were three persons suffering from consumption, including the father, and with three healthy members occupied one room day and night; the only window was small, with a northern aspect, and the result was that there was no ventilation and no sunshine. In another house in the same locality the mother was dying from consumption, and there were six children who had to occupy the same room. Dr. Burke, M.O.H. Donnybrook No. 2 District, mentioned one locality where, out of eighteen houses, all but one were beyond repair. Closing orders had been refused, for there were no other places for them to

occupy. From this and other evidence given it would appear that there is an urgent need for the erection of the proposed new cottages, and that there would be no difficulty in finding tenants even at somewhat higher rents than are paid at present.

OUTBREAK OF TYPHOID FEVER IN NEWRY.

For the last fortnight there has been a serious epidemic of typhoid fever in Newry, and several cases have been admitted to the infirmary, some of which have had a fatal termination. The urban council has therefore decided to appoint Professor Wilson of Belfast to inquire into the cause of this outbreak and to inspect the sources of the town water supply at Camlough Lake, including the surroundings of the lake, as well as the pipe line to the town.

England and Wales.

[FROM OUR SPECIAL CORRESPONDENTS.]

MANCHESTER AND DISTRICT.

TREATMENT OF TUBERCULOSIS IN MANCHESTER.

THE scheme of the Manchester Sanitary Committee for the treatment and prevention of tuberculosis, which has already been described in the JOURNAL, was laid before the City Council on February 19th for final consideration. The deputy chairman of the Sanitary Committee showed how the scheme was really an attempt to co-ordinate existing agencies and institutions. Fever cases were to be transferred from Baguley to Monsall, the former institution being reserved entirely for cases of tuberculosis, and when the extensions proposed were carried out there would be accommodation at Baguley for 300 beds. These would be mainly for advanced cases, though early cases might also be accommodated. The provision for early cases would be mainly at the Crossley Sanatorium, where 62 beds would be available, and at the Abergele Sanatorium, where 50 beds were provided. There would thus be a total of 412 beds available for early and advanced cases. It was estimated that the net charge on the rates would be about £4,300 a year, but against this cost to the city should be set the saving to the Poor Law authorities which was estimated at £15,574 a year. Several members of the council urged that the root of the evil was the poverty of the people and their inability to provide themselves with good habitations and healthful surroundings, and the chairman of the Education Committee hoped that the Government would do more to arrest consumption in children of school age. The scheme was then adopted finally by the council.

LONDON.

COUNTY COUNCIL ELECTION.

WE have received the following letter with reference to the general County Council election in London, which takes place on Thursday next, March 6th:

Sir,—The London Medical Committee are anxious to assist in securing the return of certain candidates in each constituency at the approaching London County Council election. The present position of the profession is partly due to the slight value attached to the votes of medical men, which, even if unanimous, would seldom affect the result of an election. If, however, the profession enter with enthusiasm into the campaign outlined below, it would be difficult to overestimate the services it can render. The value of its support or opposition would become proportionally enhanced, and its power of determining the conditions of service laid down under any amending Act increased.

It is suggested that every day during the contest, in such spare time as they may have, medical men should attend one of the Local Committee Rooms opened by candidates in the different districts of each constituency where their services will be gladly accepted, and on the day of the poll lend, if possible, a motor car, or other private conveyance, and that they should induce relatives, friends, and patients to give their services, and lend cars or carriages.

The ultimate object is to secure (1) improved conditions of service, and (2) medical control; the first to render it possible, and the second to render it imperative, that every man shall do his duty to the State, his patient, and himself. It should appeal to all who have been compelled to go on the panel, and who have at heart the welfare of the poor and the honour of the profession.

Yours faithfully,

521, Finchley Road, N.W. M. MACNAUGHTON-JONES, jun.

Special Correspondence.

BUDAPEST.

Politics and Antialcoholism.—Acetan for Household Use.—The "Single Child."—The Geographical Distribution of Lithiasis.

No propaganda has ever helped the case of antialcoholism in Hungary in such a measure as the present political conditions. Nominally the General Votes Bill did not meet in its present form with the approval of the Social Democratic party. They therefore resolved to respond with a general strike, but the working class could not be easily driven into a strike, as their condition is at present terribly hard, owing to scarcity of money and general trade depression. The leaders, therefore, had to find out another way of embarrassing the Government. The word went round, "Drink no alcohol. Let us weaken the Treasury, and through it the Government, by curtailing the income from spirits." A litre of pure spirit is sold here for about two crowns, or 1s. 10d., out of which one crown goes to the tax office. Against 16,597 grammar schools, only 12,336 of which are maintained by the State, there are 66,200 brandy shops in the country. The working class spends 18 per cent. of its earnings on spirits; but without doubt it has listened to its apostles and drinks considerably less spirits than formerly. Thus, whatever may be the motives of the Social Democratic leaders, the result of their tactics will be beneficial to the people by moderating the consumption of alcohol.

A Budapest druggist has found out a method by which formic acid can be distilled and refined so as to fit it for household use, in a greatly diluted form. The lay papers have expressed surprise, pointing out the poisonous nature of formic acid. The Royal Public Analyst, however, explained last week that the formic acid which is contained in the acetan, acts as acetic acid. If the latter is not detrimental, then acetan is not so; indeed, he declares acetan is used for household purposes much more greatly diluted than acetic acid, so that its poisonous effect is less. The same opinion was declared also by Professor Kétly.

The Hungarian Child Study Society has started a widespread movement for collecting data relating to the "single child" system. The collecting had mainly been done by Dr. László Nógrády, who lectured on this subject on February 10th. Until recently it had been thought that the system was a purely economical question. People did not want to distribute the lands between several children, but it had grown into a custom independent of land questions. It was quite clear that the "single-child" family did not get richer; on the contrary, it grew poorer. The "single-child" generation did not like to work; it tended to become idle and self-indulgent. Then, if landed proprietors, their farms were worked by others, to whom heavy wages must be paid with ruinous results. The single farmers already understood that the "single" system meant their ruin, and still they did not endeavour to reform because it had become a custom and the people were very conservative. The man who would alter this state by begetting several children was despised and cast out from his class. The other reason for the "single" system was female vanity. Women thought that they would remain young for a longer time and enjoy life. The spread of the system was aided by the assistance of midwives and quacks, and, unfortunately, of doctors as well. The spread of the system was further promoted by unconscientious agents who sold preventives, and by offensive advertisements in the press. The only child was spoilt by his parents, and too often enters early into a career of dissipation, the result being rapid physical and mental deterioration. Such a system must ultimately ruin the whole people.

Dr. Paul Steiner, Lecturer to the Kolozsvár University, seeks for statistics of vesical calculi in adults in different parts of the country. He has forwarded circulars to every practitioner asking them to report all cases under their observation. Similar statistical researches were made three years ago by Professor Bókay Tanos, paediatrist, who found that inhabitants of the more remote parts of the country—namely, the districts lying between the rivers Danube and Theiss—are more often attacked with vesical calculi than those in other parts of the country.

Correspondence.

IMMEDIATE OPERATION IN APPENDICITIS.

Sir,—We must all agree with what Dr. J. W. Hunt says in his interesting letter (p. 414), where he touches on a point of very great importance to general practitioners in suburbs which have for the past ten or fifteen years been deteriorating in the financial ability of their residents to pay large operating fees. It is true that some of the "coming" men are reluctant to accept, largely, no doubt, from a praiseworthy regard for the dignity of their position, smaller fees than the men who have "arrived"; but I have personally received from both classes so much consideration, which I hope I have not abused, that it is only common gratitude to say that I have never found any difficulty in obtaining the very best surgical assistance at nominal fees, or even at no fee at all, when circumstances justified such generosity. Dr. Hunt is confessedly in a similarly fortunate position, as those of us who hold him in affectionate respect can well believe. Others no doubt have had the same happy experience of capable surgeons, and immediate operation need not be foregone for want of asking a favour. After all, it is just possible that "what is lost on the swings is made up on the roundabouts."—I am, etc.,

London, N., Feb. 24th. William Whitelaw.

Sir,—The unanimity in the surgical discussion on Mr. Edmund Owen's eloquent address speaks for itself. All are agreed that immediate operation is the only course "as soon as the diagnosis of an inflamed appendix has been made." Early diagnosis is the indispensable means to that desirable result. It did not come in for special consideration, but it remains the essentially debatable question, upon which it might be worth while holding a debate for the benefit and the participation of the larger section of medical practice. Two practical suggestions were impressed upon us: one of them, with an emphasis which it is not for me to challenge, "to avoid calling in a physician"; the other, with which there could not possibly be any disagreement, "to immediately call in one or two of our surgeons," for they are the best judges. We are proud of them, not only for the excellence of their technique so admirably taught at our schools, but for their diagnostic insight acquired by personal experience. That that feeling should not be reciprocated is an argument in favour of further study on the part of our physicians, as they are likely to be still wanted for a while in a teaching capacity in connexion with so eminently medical a department as that of the abdominal ailments. The variety of our "suspicious" symptoms is such as to justify a practical rule "to watch for appendicitis always, and to examine for it as a clinical routine," just as we test all our cases for any latent renal trouble. That duty should not be delegated, but specially cultivated by practitioners and physicians, lest our diagnostic skill should decay from too exclusive a reliance upon the surgeon's brilliant diagnosis at first sight, or upon his exploratory incision. Our individual efficiency would gain much, and some progress might eventually be made in the art of diagnosis, and in the thoroughness of clinical investigation in any direction open for improvement. This would also be the best means of promoting earliness of surgical examination and treatment, as the beginnings of appendicitis occur almost invariably within the medical sphere of observation.

The number of "suspected" cases being much larger than of those to be identified by the current methods, it is inevitable, as Mr. Edmund Owen does not hesitate to admit, that the immediate attendance of the surgeon should sometimes fail to bring the actual diagnosis, and that delay should have to be incurred for further indications. In any cases of that sort that delay might be saved if by more searching methods positive evidence were obtainable of the existence of some local trouble in the region of the appendix. The neglect of any genuine facilities available for that purpose could not be readily justified. On the other hand, immediate attendance will always bring due regard for the possibility that any vague initial symptoms might be due to appendicitis, and a suggestion that a surgical exploration is the only safeguard against the unknown risks. It is apparent, then, that the rule "to operate immediately for appendicitis" has a strong tendency to become a rule "to operate immediately for suspected appendicitis." It might be well to face that new situation squarely, and to give to the subject of "suspected appendicitis, its diagnosis and its operative indications," the exhaustive consideration which it deserves. Nothing but good could result from focussing the inquiry upon the point of genuine difficulty. The surgeon's plea for immediate action could then be established upon its most legitimate and inclusive basis.—I am, etc.,

London, W., Feb. 24th. William Ewart.

Sir,—I have just completed twenty years' experience in operating upon appendicitis, and am, like Dr. Binnie and many others in America, and Sir George Beatson, more especially, in this country, not in the present—perhaps passing—fashion.

I have not lost a single case where, in my judgement, it was necessary to try and get the patient out of his attack of appendicitis into a state of quiescence, or, to use a local phrase, which well expresses my meaning, "drydock him for repairs."

It seems to me that the policy "Look and see" is one to be deprecated, because it will inevitably lead to further carelessness in the correlation of the value of symptoms of the disease and of the general condition of the patient.

We are all agreed that definite appendicitis is a surgical disease for several hours after its onset, but later on, except where evidence of pus is present, it is, I think, a condition which requires the greatest vigilance, the strictest observance of proper non-surgical treatment, to bring it into a state whereby the offending appendix can be removed with no risk except that of the anaesthetic.—I am, etc.,

Cardiff, Feb. 25th. J. Lynn Thomas, C.B., F.R.C.S.

OPERATIONS ON CHILDREN IN THE OUT-PATIENT DEPARTMENT.

Sir,—After a large experience of out-patient work in a children's hospital, I thoroughly endorse the views held by Mr. Nicoll on the above subject, as expressed in the British Medical Journal of February 22nd, and at the Belfast meeting of the British Medical Association in 1909. I happened to be one of the secretaries of the Section of Diseases of Children at that meeting, and I ventured to doubt the expediency of operating on hernia in the out-patient department, chiefly on the ground of one's position in case of any accident. So convinced was I, however, by Mr. Nicoll's results that I immediately began to add hernia and hydrocele to the list of my out-patient operations, and my colleagues followed the same course. Since then we have enormously extended our scope, and personally I have no hesitation in operating on hare-lip, some cases of cleft palate, knock-knee and bow-leg in children about 4 or 5 years of age, enlarged tonsils, which I often enucleate entirely, adenoids, naevi, tuberculous joints in the upper extremity, glands, tumours and cysts in the neck, and many other conditions requiring surgical interference. A few weeks ago I removed in the out-patient theatre an occipital meningocele in an infant a few days old with an entirely successful result. In this way numbers of children are relieved who could not otherwise have been properly treated on account of shortness of beds and lack of funds. The results have borne very favourable comparison with those obtained in the wards, and the utility of the hospital has been very greatly increased.

If a child can be carried to hospital, and if the operation wound can be so sealed or covered as to avoid accidental

contamination, I see no reason why most of the operations necessary in children should not be performed in the out-patient department. This practice also avoids the necessity of weaning children who are thriving at the breast and whose mothers may be loth to part with them at such an early age.

The results of this practice at the Belfast Hospital for Sick Children have been so successful that our Board of Management has recently provided us with a well-equipped up-to-date theatre in the out-patient department, and at the recent annual meeting of the hospital referred in very flattering terms to the work carried out in this department. Finally, the surgeon in charge of out-patients, instead of being a glorified house-surgeon or a finger-post to the wards, has now opportunities for practice and research hitherto denied him.—I am, etc.,

ANDREW FULLERTON, B.Ch., F.R.C.S.I.

Belfast, Feb. 23rd.

THE VARIETIES OF TUBERCULINS IN THE TREATMENT OF TUBERCULOSIS.

SIR,—I read with great interest Dr. Nathan Raw's article on the above subject in the JOURNAL of February 1st, page 212. On January 30th I read, before the Ulster Branch of the British Medical Association, a paper on Tuberculosis in General Practice, and in it I emphasized the fact that pulmonary tuberculosis did best when treated with bovine tuberculin, and that so-called surgical tuberculosis (though I objected to this term) did best on human tuberculin.

I reported two cases of an instructive nature on this point:

1. A case of laryngeal tuberculosis with very slight lung involvement which was so sensitive to human tuberculin that I had to desist. I then tried bovine tuberculin with the happiest results.

2. A case of erythema indurata that did well on human tuberculin, but when bovine tuberculin was tried, though in smaller doses, reacted in a marked and disastrous manner.

My experience, though only in general practice, and in a much more limited way, bears out what Dr. Raw says, and it is only for this reason that I record it now.—I am, etc.,

Lisburn, co. Antrim, Feb. 2nd. J. L. RENTOUL, M.B.

THE NEGLECT OF VACCINATION.

SIR,—Dr. Killick Millard, the Medical Officer of Health for Leicester, has criticized me very strongly (page 416) because I have ventured to express an opinion that the unvaccinated state of this country constitutes a highly dangerous condition. I recognize as well as Dr. Millard does the fact that by immediate isolation the health authorities of any given area have in late years been able to suppress small outbreaks of small-pox, but experience has shown that there are limits to this power of control, and that there is a very grave danger of an outbreak running over the border of a sanitary cordon into an unvaccinated population. Dr. Millard suggests that I am biassed, but I appeal to your readers, who are capable of judging, whether an unbiassed opinion on such a point is likely to come from Leicester.

I appeal to an outside authority of undoubted position, Dr. Martin Kirchner, one of the medical staff of the Ministry of the Interior of the Prussian Government, who, in an official report in 1911, said:

> Although in England compulsory vaccination exists, the duty of vaccination is in reality abolished. The consequence will be, and we may live to see it, that in England, if once a serious outbreak is imported, an epidemic will be created which the English people will remember for a long time (*Schutzpockenimpfung und Impfgesetz*, Berlin, 1911.)

The complacency of Dr. Millard is not shared by all medical officers of health, though they are not always in a position to obtrude their views.

Dr. Millard proceeds to ask if I "have ever considered that infantile vaccination only protects during the period of infancy and childhood, and that this period is the least exposed to the danger of small-pox infection." I am, of course, quite aware of this, but I ask in return if Dr. Millard is aware of the elementary fact that small-pox is extremely fatal in infancy, and if he is aware of the danger which an infantile population still runs. For in the recent outbreak in Sussex out of twenty-one cases there were five under 10 years old, of which three died (all unvaccinated). This shows what will happen if an epidemic gets out of hand.

Dr. Millard asks further if I am aware that our present system of infantile vaccination, which is not followed by revaccination, has one serious drawback in causing slight atypical forms of small-pox which are easily overlooked, and so frequently leads to serious outbreaks of the disease. I reply that it is better to have a population which presents mild cases of small-pox, if the disease occurs, than severe ones; the resulting mortality is infinitely lower, and the possible damage to the patient's eyes is avoided. I am tempted to wonder how Dr. Millard's antivaccinist supporters in Leicester will receive his admission that infantile vaccination does lead to a "slight atypical form" of small-pox.

Dr. Millard concludes with some "friendly advice" (which appears to me in extremely bad taste) to the effect that as the occupation of the public vaccinator is a dying industry I should "go on the panel" or enter the public health service. I beg to assure Dr. Millard that I am in no grave need of either branch of practice for a livelihood, that public vaccination has never been anything but a small item in my work, and it would not concern me at all if I abandoned the emoluments; further, that I do undertake work under the Insurance Act to the small extent to which I care to do so, and as I was in active practice before Dr. Millard was even a medical student I can hardly expect to enter the public health service at my time of life.—I am, etc.,

ARTHUR MAUDE,
President, Association of Public Vaccinators.

Westerham, Feb. 22nd.

THE CONSTITUTION OF THE ASSOCIATION.

SIR,—I should like to support Dr. Napier Jones in his contention that something must be done to prevent such waste of time and money as we have incurred in recent meetings of the Representative Body. Of late these meetings have resolved themselves into a hopeless endeavour to cope with a chaotic mass of resolutions and amendments, ending in a despairing surrender to the inevitable when about half the work has been somehow scrambled through. The *reductio ad absurdum* was, as Dr. Napier Jones indicates, reached at the Special Meeting of January last, the first day of which was entirely wasted. I do not think many of us have any delusions as to the quarter in which responsibility belongs for this fiasco; certainly the holding up of the meeting and the staving-off of the real issue were a masterly performance in their way. Perhaps I feel somewhat strongly on this matter, inasmuch as, when the final adjournment came, several resolutions entrusted to me by my Division were the very next items on the agenda. But of what use to invite Divisions to send up resolutions, when 50 per cent. of them will receive no attention? It is a waste of time and money for us to go to London as mere voting machines.

The remedy proposed by Dr. Napier Jones is that all the main issues should be clearly formulated by the Council, and discussion limited to these. For myself, I think it a good suggestion, if only the Council can be empowered and induced to carry it out. Many of us in the past have, however, noticed a regrettable timidity and ambiguity in the framing of such resolutions as the Council has formulated for submission to the Divisions.

Then, again, there is the difficulty that Dr. Napier Jones's proposal involves an increase in the power and authority of the Council. I say the difficulty—not the objection—because of the notorious fact that the Divisions and even the Representative Body are jealous of any such increase of the Council's present powers. Recent events have not tended to allay this mistrust; they have produced in many minds the conviction that the Council may be captured by any resolute faction and exploited for its partisan ends.

The fact remains that to rely upon Divisional and individual initiative for the supply of the subject-matter of debate has proved a failure; the main issues are flooded in a mass of irrelevant proposals, counter proposals, amendments, and riders, with the result that we have seen. The agenda committees have done their best to evolve order

out of chaos, but no committee can render it possible to adjudicate within a couple of days upon a subject-matter whose adequate debate would occupy a busy month. Something, then, must, it seems, be done; and if not what Dr. Napier Jones advises, what is the alternative?—I am, etc.,

CHARLES J. WHITBY,
Representative, Bath Division.

Bath, February 22nd.

SIR,—Humiliating though the defeat of the profession has been, degrading though our servitude is, there is yet some hope of retrieving our position and regaining our freedom if only we dare to look facts squarely in the face and learn from them our lesson.

It is easy to be personal; cheap to bandy about such epithets as "traitors" and "blacklegs." It is far more difficult to bring ourselves to acknowledge that the true cause of defeat lies with ourselves; that we have been living in a fool's paradise; that we have been so utterly and incomprehensibly foolish as to pit our own obsolete weapons, our undisciplined forces, and our slender purses against the modern machinery, the perfect organization, and the inexhaustible funds of the British Government. Yet this is the fact, and the sooner we acknowledge it the better it will be for us and for the future of our profession, for the continuation of the present conditions, even for a short period, means inevitably the future damnation of the profession.

Enthusiasm; pledges and undertakings, whose binding strength is ethical, not legal; a voluntary defence fund, depending upon the popularity of the policy or of the *personnel* of its trustees, and upon the power and pertinacity with which it is advocated. These have been our chief weapons. These weapons have failed us at the crucial moment. They were, indeed, the best that could be devised, fighting, as we were, under the aegis of the British Medical Association.

The Association is a learned society, with the legal powers of a learned society, and none other. It has not the power to impose upon its members a legally binding pledge, nor to inflict a compulsory levy, nor to use its funds for the protection of its members. Our only other power was that strong ethical force which has grown up round the Association, and upon which too much reliance was placed, for that force was strong enough to make the given word a binding pledge right up to the eve of battle, but weak enough to melt away when faced with ruin and starvation. Failure was inevitable from the beginning. Failure is still inevitable if we again attempt to organize on similar lines.

To re-establish ourselves we must reconstitute ourselves. The lines of reconstitution must be such that the organization will be legally able to enforce a pledge, to impose and recover a levy, and to administer its own funds for the protection of its members.

At the meeting at the Caxton Hall twelve months ago, convened by the Medical Federation, Sir Victor Horsley took exception to my statement that the only course open to the Association, in order to attain the necessary powers, was to amalgamate or closely co-operate with the Medical Federation or some similar body. He expressed the opinion that, in addition to the course we proposed, there were two others—one by means of the new company, the other by converting the Association into a trade union.

At the annual meeting in Liverpool the new company movement was acknowledged to be a failure, and the trade union idea received its quietus when, in response to a singularly enthusiastic demand for trades unionism, we were told by the legal expert that it would be impossible to convert the Association into a trade union and at the same time preserve the entity of the Association. It would thus seem that it is practically impossible to convert the Association into an efficient organization for the protection of its members.

The third course, proposed by Bristol two years ago, is for the Association closely to ally itself to and co-operate with, even to the extent of taking over and governing, some outside organization possessing the necessary powers. This course still remains open, and, in my opinion, is the only possible means of saving the Association.

With regard to the precise form of organization required for the purpose much might be said as to the relative claims of a trade union and a limited company. The actual strength, however, of a trade union is but little greater than that already possessed by the Association in so far as pledges are concerned, for a member can resign his membership whenever he chooses, being kept loyal by his comradeship and by "peaceful picketing." The latter being an impossible weapon with us, we should again have to rely upon the weapon which has already failed us—the ethical unity of our members. On the other hand, a limited company with strong constitutional powers can impose a legally binding pledge and a compulsory levy, being able to enforce both by means of its power to sue in a court of law. A limited company has, therefore, far stronger powers of the kind we require that a trade union. It has many times been argued that, so far as the medical profession is concerned, a legal bond will not prove more binding than ethical and moral bonds; that the members of the profession who will break the latter will also break the former. Other trades have found it necessary to bind the members together with legal bonds, and have found them efficient. At all events we have proved the ethical and moral bonds alone to be utterly inefficient, and it is our duty to make the next attempt on other and, as many think, on stronger lines.

I am not in any way specially pleading on behalf of the Medical Federation. All I wish to emphasize is that the Association is *per se* powerless to protect us and our interests, and that it must perforce ally itself to some organization with stronger legal powers if it wishes to carry out any successful campaign in the future.

I, personally, am so convinced of the futility of the Association organizing any great campaign while relying on its present constitution alone that I shall decline to take part in any such campaign, either general or local. For me to do so would be dishonest, for I know it to be merely the building up again of the ruins of a house whose foundations are upon the sand.—I am, etc.,

H. F. DEVIS.

Bristol, Feb. 21st.

SIR,—At the present time, when there would appear to be a strong element in favour of making the British Medical Association a trade union, the letter in your issue of February 22nd by Dr. Arthur J. Brock is most opportune. Medical men by training and inclination are as a body unfitted for commercial pursuits, and though it cannot be denied that the British Medical Association, by its recent incursion into such regions, has gained a shilling or two a year for each insured person for those of its members who have become insurance doctors, it has on the whole been a miserable failure. By all means let all who wish for protection join together for this purpose, but every member of the Association must wish it to retain the high position it has held as a body for the advancement of medical science and healing, and this can only be by retaining in its ranks those members of the profession who have made this their only object; and can it be thought for a moment that these men will continue members of an Association that is hopelessly trying to mix up science and trade unionism in one body? If the Association persists in its present policy, it is foredoomed to failure; but by returning to its legitimate position of a scientific body, it can regain the respect, not only of its members, but also of the public. There is doubtless a considerable number of members of the British Medical Association at the present time who wish for a trade union, and if a society is formed independent of the Association, with picked officials at its head, there will be a far better chance of gaining such protection as these members consider they need in the future practice of their profession.—I am, etc.,

F. L. NICHOLLS.

Fulbourn, Feb. 22nd.

SHIP SURGEONS.

SIR,—There is at present a movement on foot to raise the scale of pay of ship's officers all round. It is well known that up to the present the remuneration of the ship's officer has been very poor, but as it is, not even so poor as that of the ship's surgeon, who also ranks as an officer, though non-executive. A meeting of the Ship Owners' Association was held in Liverpool on February 24th, and it was decided to help on the consideration of an increase in the officers' salary. Surely now is the time

for a master stroke from the medical profession as regards its sea-going members. Why not make a representation to the Ship Owners' Association that an increase in salary for ship surgeons is essential, and also that a minimum wage must be established. If some effort is not made now we shall find that ship's officers will get their desires fulfilled, and that at the same time the silent medical officer will remain on his miserable pittance, and a large bulk of our profession will still continually be afloat on the meanest possible remuneration. Some response to a call for union, and some opinions from those who know the life of the ship's surgeon, would be certainly a step in the right direction.—I am, etc.,

Manchester, Feb. 25th. SHIP'S SURGEON.

Obituary.

SIR THOMAS FREDERICK CHAVASSE, M.D., C.M.EDIN., F.R.C.S.ED., F.R.C.S.ENG. (HON. CAUSA).

CONSULTING SURGEON, BIRMINGHAM GENERAL HOSPITAL.

We announced briefly last week the death of Sir Thomas Chavasse, which occurred at Linthurst Hill, Barnt Green, Worcestershire, on February 17th, after an illness following an accident in the hunting field. He was the sixth son of Thomas Chavasse, F.R.C.S.Eng., a successful family practitioner of Birmingham, and was born at Wylde Green House, Wylde Green, where his father resided during the latter part of his life. Mr. Pye Chavasse, the author of *Advice to a Mother* and other well-known books, was his father's cousin, and Mr. Sam. Chavasse, another cousin, was also in good medical practice in Birmingham, so that the medical and social family connexions were very strong.

The early part of Chavasse's medical education was obtained in the Birmingham Medical School, but in 1873 he went to Edinburgh, where he graduated M.B. and C.M. in 1876 (M.D. 1878), afterwards holding the post of resident surgeon to the late Professor Spence in the Royal Infirmary. After his term of office in the infirmary he visited Berlin and Vienna, but was called home in the autumn of 1877 to become a candidate for one of two newly created assistant surgeoncies at the General Hospital. The other candidates were Mr. W. G. Archer (who retired from practice after a few years and died young), and Mr. Bennett May, afterwards the well-known surgeon to the Queen's Hospital and Professor of Surgery in the University of Birmingham. The result of the contest was the election of Archer and Chavasse, but, as the holders of the office had to be Fellows of one of the Royal Colleges of Surgeons or to obtain the Fellowship within a year, an objection was lodged against Chavasse's election on the ground that as he was only 23 years of age he could not comply with the law. This objection was over-ruled as being anticipatory, and the College of Surgeons of Edinburgh suspended its by-law and elected him a Fellow (there was no examination then) in spite of his age.

At that time there were five surgeons to the General Hospital, but the new laws had reduced the senior posts to four, so that two vacancies were required before an assistant surgeon could be promoted, and their prospects seemed dim; yet in 1880 Mr. Goodall became ill and resigned, and the following year Mr. Baker, the senior surgeon, retired. In the contest that followed Chavasse was again successful, becoming full surgeon to the hospital in December, 1881, when he was only 27; by the retirement in due course of Mr. Oliver Pemberton and the premature deaths of Mr. Bartleet and Mr. Jolly, he found himself senior surgeon to the hospital in 1894, a position he retained until his resignation early last year. In 1899 he was elected F.R.C.S.Eng. (*honoris causâ*), and in 1905 he received the honour of knighthood.

At the Birmingham meeting of the British Medical Association in 1911 he presided over the Section of Surgery; he was an ex-President of the Birmingham Branch of the Midland Medical Society and the Medical Benevolent Society.

He leaves a widow, a son who is studying medicine, and three daughters of whom the eldest is married to a son of Sir John C. Holder, Bart.

Sir Thomas Chavasse was a skilful surgeon, and a popular and kind-hearted man who will be much missed. When he resigned the hospital he gave up practice, and looked forward to many years of quiet enjoyment of his leisure, "hunting four days a week," as he said when asked what he should do with himself. An excellent portrait painted by Mr. Nowell, subscribed for by the staff and governors, hangs in the board room of the General Hospital, and will preserve his memory in that institution.

A COLLEAGUE writes: Sir Thomas Chavasse had by his early training prepared himself for the practice of surgery. An initiation into the methods of Lister and a firm belief in their efficiency enabled him to keep abreast of the rapid advances that were taking place about the time of his appointment to the full staff. Study in Vienna and Berlin widened his outlook and stimulated him to increased efforts. He was a progressive surgeon, always ready to give a fair trial to new methods, though reserving to himself the right to reject them if they did not answer the purpose for which they were advocated. His clinical instinct enabled him to come quickly to a conclusion as to the nature of a case, and, having made up his mind what line of treatment to adopt, he acted boldly, and was prepared to deal with any difficulties that arose. His influence was that of a strong man whose opinion was founded on wide experience, sound judgement, and a knowledge of men and affairs. A close association with him in the wards of the hospital for many years has been a great privilege, for, apart from his charming personality, there was always the consciousness of being able to obtain his counsel and advice under all circumstances which presented difficulties, either from a surgical or an administrative point of view.

SURGEON-GENERAL GEORGE BIDIE, C.I.E.,

INDIAN MEDICAL SERVICE (RETIRED).

SURGEON-GENERAL GEORGE BIDIE, Madras Medical Service, retired, died at Bridge of Allan, Scotland, on February 19th. He was born on April 3rd, 1830, the son of W. Bidie, of Buckies, Banffshire; was educated at Edinburgh and Aberdeen, and took the M.D. degree, Marischal College, Aberdeen, and the L.R.C.S.Edin. in 1853. He entered the I.M.S. as Assistant Surgeon on February 20th, 1856, became Surgeon on February 20th, 1868, Surgeon-Major on July 1st, 1873, Brigade Surgeon on February 28th, 1883, Deputy Surgeon-General on October 11th, 1884, and Surgeon-General on October 9th, 1886. He retired on May 29th, 1890. In 1882 he was decorated with the Order of the Crown of Italy, was made a C.I.E. on January 1st, 1883, received a Good Service Pension on February 10th, 1889, and was appointed Honorary Surgeon to the Queen on February 16th, 1898. He had thus served as Honorary Surgeon to three sovereigns, Queen Victoria, King Edward VII, and King George V; his last service in this capacity being when he attended on His Majesty's Staff at the review held at Windsor Castle in June, 1912.

Soon after entering the service, he served with the Haidarabad contingent in the Mutiny in 1857–58, receiving the medal. In 1859 he was posted as Civil Surgeon of Guntur. In 1867–68 he was placed on special duty in the coffee districts of Mysore and Coorg, and reported on the ravages of the borer insect on coffee plants. From 1870 to 1872 he was Secretary to the Surgeon-General, and held that post again from 1880 to 1885. From 1872 to 1884 he was Superintendent of the Madras Museum, served on the Cinchona Commission in 1873, and became a Fellow of Madras University in 1879. In 1885 he became Sanitary Commissioner of the Madras Presidency, and in 1886 Surgeon-General with the Government of Madras. After his retirement, he acted as delegate from Madras at the International Congress on Hygiene and Demography in 1891. He was the author of numerous works, chiefly on natural history, economic products, and coinage, all subjects connected with his work as Superintendent of the Museum.

In 1854 he married Isabella, daughter of the late Alexander Wiseman, of Banchory, Aberdeenshire. One of his sons, Lieutenant-Colonel George Bidie, has followed in his father's footsteps in the Madras Medical Service.

ERNEST MAYNARD PAIN, B.A., M.B., CH.M.SYDNEY.

NEWS has been received by the Church Missionary Society of the circumstances of the death of Dr. E. Maynard Pain, which took place at Old Cairo on February 12th, and was then reported by telegram. It appears that Dr. Pain had been attending cases of cerebro-spinal meningitis which had been admitted to the mission hospital. One of the patients is said to have coughed in his face, and within thirty hours he was taken gravely ill and died after an illness of only about twenty-four hours, though all that was possible was done to save his life.

This event, occurring within twelve months of the deaths of Drs. Pennell and Barnett on the North-West Frontier of India from septic poisoning, is a reminder of the risks to which medical practitioners are exposed who are working in lands where disease is met with in a specially virulent form, and particularly medical missionaries who for various reasons must face difficulties of an unusual kind. This is not the first time that Dr. Pain has been attacked by serious illness as a result of his professional responsibilities, but he never flinched from the path of duty.

Dr. Pain was the first medical graduate from Australia to join the ranks of the medical missionaries of the Church Missionary Society, which he did in the year 1902. He was born on July 23rd, 1873, at Cobbitty, New South Wales, and was the son of the Bishop of Gippsland. He was educated at Sydney Grammar School and University, and had a successful career as a student. Before going abroad he held the posts of resident medical officer, and later on of medical superintendent of the Prince Alfred Hospital, where he gained useful experience. He was, therefore, a most valuable addition to the medical staff of the mission hospital at Old Cairo, and he proved to be a capable surgeon. He was greatly respected, not only by his missionary colleagues but by the authorities of the Cairo Medical School, for which he was an examiner.

He was an enthusiastic missionary, and helped in no small measure to bring the Old Cairo Hospital to the remarkable standard of efficiency to which it has attained.

Such men are an honour to the profession to which they belong. In entering upon the calling of a medical missionary they have closed the door against those positions of eminence and worldly prosperity which might have been open to them. Yet as we think of their lives we realize that they have chosen in many ways the better part, and not only is the world the better, but the profession is the richer for the memory of a noble life. May it lead others "to follow in their train."

Dr. Pain was twice married, and leaves a widow and children.

THE announcement of the death on February 15th, after a short and sudden illness, of Dr. CAMPBELL BOYD will have been received with regret by a large circle of friends. Genial and kindly, generous and sympathetic, he was much loved and esteemed, and his death during his term of office as President of the Chelsea Clinical Society will be much felt by its members. He was a son of the surveyor for the county of Wicklow, who bore the same name. He was born 55 years ago, and received his medical education at the Carmichael College, Dublin, and Charing Cross Hospital Medical School; he obtained the diplomas of L.R.C.P.I. in 1883 and L.R.C.S.I. in 1885. He settled first in practice at Denmark Hill; after some years he removed to Surbiton, and later on settled in Chelsea. He was a member of the Obstetrical and Gynaecological Section of the Royal Society of Medicine, and of the British Medical Association. He was an active member of the Irish Medical Schools' and Graduates' Association, was a member of its Council for some years, and for the last few years filled the post of metropolitan secretary of that association. He joined the Chelsea Clinical Society in 1906; two years later he was elected a member of its council, and in 1910 became vice-president, an office which he retained until elected president in October last. At council and other official meetings his high sense of duty made him a frequent attendant, and he was always ready to give of his best to help on this society, in which he took so keen an interest. Dr. Boyd contributed to this JOURNAL a note upon a six-fingered family, and also on strophanthus as a cardiac tonic in acute heart failure. He was interested in engravings, and had a good collection of mezzotints. He has left a widow, to whom the sad calamity has come as a crushing blow, in which she will have the sympathy of all who knew her husband.

DR. PHILIP HAIR, who died after a short illness on February 9th, had been in failing health for some time, but had continued his ordinary work until about a fortnight before his death, and even had seen two old patients on February 8th. He was the son of the late Mr. James Hair of Carlisle. He became a student at the University of Edinburgh, where he had a distinguished career, and obtained the degrees of M.B. and C.M. in 1866; in 1868 he graduated M.D. and received the gold medal for his thesis on the muscular fibres of the alligator, subsequently published in the *Journal of Anatomy and Physiology*. For a short time he remained in Edinburgh as assistant demonstrator of anatomy to Professor Goodsir and Professor (now Sir) William Turner. He afterwards spent some months in attending the hospitals in Paris and acquired fluency in French. When, some ten or twelve years ago, Dr. Blanc and Dr. Forrestier of Aix-les-Bains attended a meeting of the local medical profession Dr. Hair gratified all present by returning the thanks of the meeting to them in a very eloquent speech in their own language. After his visit to Paris Dr. Hair returned to his native city, and was elected surgeon to the Carlisle Dispensary in 1873. In 1898 he became one of the physicians to the dispensary, an appointment which he held up to the time of his death; in fact, he took a great interest in the work of that institution throughout the forty years he worked in Carlisle. Dr. Hair, who was 71 years of age, is survived by his wife and daughter.

The Services.

MUTINY VETERANS.

The Indian Medical Service.

THE article in the BRITISH MEDICAL JOURNAL of February 8th (p. 312) on the introduction into the *Monthly Army List* of the letters C and M to distinguish officers on the active and retired lists who served in the Crimea and the Indian Mutiny respectively, stated that the names of thirty-six medical officers (including one quartermaster) had been so distinguished, and that among them were the names of thirteen officers of the Indian Medical Service who served in the Mutiny, and one of them in the Crimea also. The actual number of survivors is, however, considerably larger.

The *Indian Army List* of January, 1913, gives the names of at least twelve other officers on the retired list of the Indian Medical Service who served in the Mutiny, one of them also in the Crimea. The war services of these officers were once recorded in the *Army List*, but have now dropped out. Three—Beaman, Harris, and McLeod—were Madras men; the other nine belonged to the Bengal Service.

Their names and war services are as follows:

Beaman, A. H. Mutiny, in N.W. Province.
Caldwell, W. S. Mutiny, with Rohilkand Field Force.
Carter, F. Mutiny, with Punjab Movable Column, medal.
Christison, Sir Alexander. Mutiny, action of Sasia, near Agra, July 5th, 1857; and Central India, medal with clasp. Also Burma, 1852–53, medal, and clasp for Pegu.
De Renzy, Sir Annesley. Mutiny, siege of Lucknow, medal. Also Burma, 1852–54, medal with clasp; and Naga Hills, 1879–80, medal, and C.B. (K.C.B., June 26th, 1902.)
Grant, N. J. Mutiny, dangerously wounded at Rohni, June, 1857.
Harris, W. H. Crimea, siege and fall of Sebastopol, attack on Redan, and battle of Tchernaya, medal with clasp, and Turkish medal. Mutiny, capture of Lucknow, medal.
Hayes, W. H. Mutiny, Kol rising, wounded near Chaibasa, January 14th, 1858.
McLeod, A. C. Mutiny.
MacTier, W. F. Mutiny, siege of Delhi, twice mentioned in dispatches, medal with clasp. Also Sutlej campaign, 1845-6, actions of Mudki, Aliwal, and Sobraon, medal with two clasps; and Punjab campaign, 1848–9, actions of Ramnagar, Sadullapur, and Chilianwala, medal with clasp.
Paske, C. T. Mutiny, operations near Azamgarh, medal. Also Burma, 1853, medal; and Bhutan, 1865–6, clasp.
Sutherland, P. W. Mutiny, with Murray's Jat Horse, medal.

At least twenty-two other officers of the Indian Medical Service are still living who were in the service at the time of the Mutiny, but do not appear to have seen active service in the campaigns.

We understand that corrections will be made in future lists, and that communications have already been addressed by certain officers to the Military Secretary at the India Office, and to the Secretary at the War Office.

Vixere fortes ante Agamemnona—other wars, as fiercely contested and perhaps as important as the Crimean war and the Mutiny, had been fought in India in the previous decade; the Sutlej campaign or the first Sikh war of 1845–46, and the Punjab campaign or second Sikh war of 1848–49. Two officers of the Indian Medical Service who served in both these wars still survive. Surgeon-Major Mactier's war services are given above. The other is Surgeon-Major Henry Benjamin Hinton, who was born on March 7th, 1813, three months before the battle of Waterloo, and entered the Bengal Service on January 14th, 1839, over seventy-four years ago. He retired on March 7th, 1868. His war services comprise: Gwalior, 1843–44; Sutlej, 1845–46; actions at Badiwal, Aliwal, and Sobraon, medal with clasp; Punjab, 1848–49; and China, 1858–60. Though serving in India at the time, he does not appear to hold the Mutiny medal. If he is still alive—he was certainly living in December, 1912—he is now within one week of completing his century.

Does any officer still survive who took part in the first Afghan war, 1839–1842? Hinton was serving in India at the time, but his regiment, the 65th Bengal Infantry, did not take part in the campaign, but was then stationed at Dinapur and in Arakan.

THE TERRITORIAL FORCE.

FIRST LONDON DIVISION.

MAJOR-GENERAL W. FRY, C.V.O., C.B., Commanding the First London Division (T.F.), will this day (Saturday, March 1st) open the new headquarters of the Royal Army Medical Corps of this division which are situated at the Duke of York's Headquarters, Chelsea, S.W. The proceedings will be terminated with a smoking concert for which an excellent programme has been arranged. The chair will be taken by Colonel F. Harper, A.D.M.S., 1st London Division.

ROYAL NAVY MEDICAL SERVICE.

THE GILBERT BLANE MEDAL.

THE Gold Medal founded by the late Sir Gilbert Blane, Bart., to be given biennially, has been awarded by the Director-General of the Medical Department of the Navy and the Presidents of the Royal College of Physicians and the Royal College of Surgeons to Fleet Surgeon Richard C. Munday for his Journal of H.M.S. *Hyacinth* for the year 1910, and to Fleet Surgeon Edward Sutton for his Journal of H.M.S. *Highflyer*, February 21st to December 31st, 1911.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

THE following degrees have been conferred:

M.D.—*R. P. Cockin, R. M. Ranking.
M.B., B.C.—F. S. Adams, R. S. Kennedy.
*Admitted by proxy.

UNIVERSITY OF BRISTOL.

THE following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—Kathleen M. Cole, B. C. Eskell, A. G. Hieber.
D.P.H.—W. Bainbridge, W. Pomeroy, Sheo Nan Don Tiwary.
Part II, Completing Examination: A. H. Finch. *Part I*: P. Moxey.

UNIVERSITY OF EDINBURGH.

UNIVERSITY COURT.

Appointments.

AT a meeting of the University Court on Monday, February 19th, among other appointments made were those of Mr. R. Chapman Davie, M.A., B.Sc., as Lecturer on Botany, and of Dr. W. G. Sym, as Lecturer on Diseases of the Eye; of Mr. David G. Hogarth, M.A., Fellow of Magdalen College, Oxford, and Keeper of the Ashmolean Museum, as Munro Lecturer on Anthropology and Pre-historic Archaeology for 1914; of Dr. Alexander Lauder (Edinburgh), as additional Examiner in Chemistry, and of Dr. N. T. Brewis, as additional Examiner in Gynaecology. The draft ordinance by the University Court (foundation of the Moncrieff Arnott Chair of Clinical Medicine) was submitted and finally approved.

Medical News.

SIR RICHARD DOUGLAS POWELL, Bart., K.C.V.O., will deliver two Emeritus Lectures on the climatic treatment of pulmonary diseases on Fridays, March 7th and 14th, at 3 p.m., in the Middlesex Hospital Medical School.

SIR RICKMAN J. GODLEE, President of the Royal College of Surgeons, will on Thursday, March 13th, at 9 p.m., give the Foundation Oration before the University College Union Society on "Lister and his Work."

A DISCUSSION on the Milk and Dairies Bill will be opened by Dr. Herbert Jones, M.O.H. Hereford Combined Districts, at a meeting of the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W., at 7.30 p.m. on March 11th.

AT a meeting of the Institute of Chemistry to be held at King's College, London, on March 12th, a lecture on the function and scope of the chemist in a pharmaceutical works will be delivered by Mr. Charles H. Hill, B.Sc., F.I.C.

SOME time ago it was announced that the Radium Development Syndicate would probably undertake the management of the baths of Bath. It is now stated that should negotiations to this end come to nothing, the Corporation will itself carry out a development scheme.

THE fourth lecture to be given by Dr. James Kerr Love under the auspices of the National Bureau for Promoting the General Welfare of the Deaf will be delivered at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W., on Tuesday, March 4th, at 6 p.m. The subject will be true hereditary deafness.

A COURSE in advanced clinical ophthalmology will be given at the clinique of Professor de Lapersonne at the Hôtel-Dieu, Paris, commencing on April 1st. It will continue for two months, and foreign doctors will be admitted to it. The fee for the course, which will include a special series of demonstrations on refraction by Professor Weiss, is 100 francs.

THE late Lord Ilkeston by his will left a sum of £800 to the University of Durham upon trust, to apply the income in memory of his late daughter by the foundation of a Winifred Foster scholarship for a woman student who requires help to maintain herself at the university. The net personalty was proved at £18,784, and he left certain American property to his son and successor in the title.

IN the article on "The Metropolitan Water Board as a Health Authority" published on February 15th, reference was made to the epidemics of typhoid fever at Maidstone, Lincoln, and Swanage. We have received a letter from a correspondent contending that it was unfair to mention Swanage alongside of Maidstone and Lincoln, inasmuch as at the last-named place there were only 23 cases all told, counting those that developed elsewhere, among a population with visitors of 6,000 persons. All the causes of the trouble in Swanage have now been put right.

MR. WILFRED TROTTER'S two Hunterian lectures on the principles and technique of the operative treatment of malignant disease of the mouth and pharynx will be delivered at the Royal College of Surgeons on Monday and Wednesday next at 5 p.m. on each day; the first lecture will discuss principles and the second technique. The Arris and Gale lecture by Dr. Charles G. Seligmann, lecturer on ethnology in the University of London, will be given on March 7th, at 5 p.m.; the subject is the Hamitic element in the population of the Anglo-Egyptian Sudan. There are two great branches of the Hamites, the northern and the eastern; the lecture will deal only with the latter, and the mixed peoples to which they have given rise.

LIEUTENANT NINNIS, of the Royal Fusiliers, a member of Dr. Mawson's Antarctic Expedition, who lost his life by falling into a crevasse while sledging, was the son of Inspector-General Ninnis, R.N. (ret.), who was himself a member of the British expedition of 1875–6, under Sir George Nares. The expedition under the direction of Mr. Douglas Mawson, D.Sc., Lecturer in Geology in the University of Adelaide, was organized in Australasia, and the fund to defray its cost was for the most part raised there. Inspector-General Ninnis, it may be interesting to recall, was naturalist to the expedition which surveyed the northern territory of South Australia in 1864–6. Lieutenant Ninnis was an officer of high promise, and much sympathy will be felt with his father.

Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

COMMUNICATIONS respecting Editorial matters should be addressed to the Editor, 429, Strand, London, W.C.; those concerning business matters, advertisements, non-delivery of the JOURNAL, etc., should be addressed to the Office, 429, Strand, London, W.C.

MANUSCRIPTS FORWARDED TO THE OFFICE OF THIS JOURNAL CANNOT UNDER ANY CIRCUMSTANCES BE RETURNED.

CORRESPONDENTS not answered are requested to look at the Notices to Correspondents of the following week.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

TELEGRAPHIC ADDRESS.—The telegraphic address of the EDITOR of the BRITISH MEDICAL JOURNAL is *Aitiology, Westrand, London.* The telegraphic address of the BRITISH MEDICAL JOURNAL is *Articulate, Westrand, London.*

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2630, Gerrard, BRITISH MEDICAL ASSOCIATION.
2634, Gerrard, MEDICAL SECRETARY.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

C. asks what cynic described poetry as a "disorder of the intestines."

W. W. N. would be glad of details and results of the method of skin-grafting by blistering and then grafting on the layer of epidermis raised by blister.

ANSWERS.

THALASSA, who wishes to begin the study of ecclesiastical architecture, will find *English Gothic Architecture*, by P. H. Ditchfield, M.A., F.S.A. (London: J. M. Dent and Sons, 1s.), a good elementary book in which technical terms are explained. A standard work is Parker's *Concise Glossary of Gothic Architecture* (Oxford: Parker and Co., 5s.) Mr. T. Francis Bumpus has written two books on *The Cathedrals of England and Wales* (in three volumes, 6s. each), and *The Cathedrals of Northern France* (6s.) respectively (London: T. Werner Laurie). The study of Gothic architecture is, perhaps, best begun in Northern France, passing from the ruins of Jumièges to Chartres. Within the bounds of London our correspondent may study Westminster Abbey and Southwark Cathedral, and by looking at St. Paul's and the other Wren churches, and the new Roman Catholic Cathedral at Westminster will be able to grasp something of the two main tendencies in architecture designed to subserve the needs of the rites of the Christian churches.

TABES.

PORTCULLIS writes that "Fairlands" would probably find the treatment of the urethra suggested by Dr. L. N. Denslow in *A Surgical Treatment of Locomotor Ataxia* (London, Baillière, Tindall, and Cox, 1912) would meet his patient's case. The volume was reviewed in the BRITISH MEDICAL JOURNAL of February 15th, 1913, p. 348.

SPHYGMOMANOMETERS.

A. J.—We believe that beyond the estimation of the systolic pressure little advance has been made in the solution of the problem of variations in blood pressure, and instruments praised for some peculiarity are not generally of more value than the ordinary types.

CHEWING GUM.

DR. A. W. GILCHRIST (Nice) writes: Is it not rather in America, where the practice is so general, that Dr. Kerr should seek the information he refers to in your issue of February 22nd? I would be surprised if he succeeded in obtaining evidence of much harm arising from the indulgence in question. Indeed, I have often asked myself, in admiring the finely developed contour and firmness of the American jaw, and the superiority in general of their teeth as compared with those of our own people, whether the process of constant mastication involved in the use of gum (a kind of rumination, in fact) is not of marked developmental advantage.

LETTERS, NOTES, ETC.

PUBLIC-HOUSE REFORM.

UNDER this suggestive title, the People's Refreshment House Association has issued an attractive booklet (*Public House Reform.* The People's Refreshment House Association, Limited. Westminster. Pp. 55 + iv; 27 plates and map. Price 6d.) giving an account of its work. The object of the association is to change public-houses from being mere drinking dens to places where food and non-alcoholic refreshments are to be as easily obtained as drink. It aims to make each landlord a licensed victualler in the true sense of the word—a purveyor of victuals. The managers of the houses controlled by the association have a substantial interest in the sale of food and non-intoxicants, but none in the sale of intoxicants. It is, therefore, to the manager's interest to push the sale of food, and hence the houses are real refreshment houses. Each house has a tea-room distinct from the rooms where alcoholics are sold, and many have tea-gardens. The association controls 113 public-houses in all parts of the country, and those illustrated suggest the inviting comfort of the picturesque country inn. The spread of temperance has created a demand for non-alcoholic refreshment. The tea shops which dot the streets of our cities testify to this need, whilst the cycle and the motor car have accentuated the want upon the country highways. And if extreme teetotalers cannot say with Chaucer, in the lines quoted by the association,

> In everything I wot there lies measure:
> For, though a man forbid all drunkenness,
> He biddeth not that every creature
> Be drinkless altogether, as I guess,

moderate men will watch with interest this growing effort to grapple with intemperance by giving to the word refreshments its original common-sense meaning, and not restricting it to liquors consumed under conditions which make excess dangerously easy.

RHEUMATOID ARTHRITIS.

DR. W. J. MIDELTON (Bournemouth) writes: I was much interested in Dr. F. G. Thomson's article on rheumatoid arthritis which appeared in the BRITISH MEDICAL JOURNAL of February 15th, 1913. Several years ago Dr. Jones Llewelyn kindly talked at length with me, calling my attention to many symptoms common to certain cases of arthritis, Graves's disease, tetany, myxoedema, etc.; also to the long train of symptoms showing definite impairment of the nervous system in rheumatoid arthritis. As the result of observation of a large number of cases, I find I can cordially support him. However deficient, in the minds of some, the evidence may be that infection plays a large part in most of the cases, I personally find, the more I think of infection and impairment of the nervous system, the more successful I am in relieving or curing rheumatoid arthritis and chronic arthritis generally. There is one point that seems very generally overlooked by authors on this subject—namely, lingering infection. I hold that the measles, scarlatina, etc., of childhood may linger in the system and contribute to a development of arthritis many years after. I find that persistent treatment by means of continuous counter-irritation, for years if necessary, will keep patients improving instead of going from bad to worse.

WAS NAPOLEON EMBALMED?

DR. R. HENSLOWE WELLINGTON (Temple, E.C.) writes: Members of the Association must have been deeply interested in all that has appeared lately in the columns of our JOURNAL concerning Napoleon and the autopsy upon his body. I have watched for some mention as to whether it was embalmed or not. On p. 1444, June 22nd, 1912, of the JOURNAL is an article on "The Remains of Napoleon," in which it says that "owing to the lack of necessary materials it had been impossible to embalm the body after death." but that at the exhumation of the body in 1840 "the remains were found in an almost perfect state of preservation," and that Dr. Max Billard, who is quoted, attributes the preservation to hermetic closure of the (four) coffins in which they were enclosed preventing the access of micro-organisms. Against this Rose, in his *Life of Napoleon*, vol. ii, p. 572, says, "After being embalmed the body was laid out in state." He is not the only biographer who says this. It would therefore be interesting to know which or who is correct, and as to whether saponification took place.

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